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Read Shopping Express for 32 pages of Britain's best computer bargains

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Going round the twist

If there's one element of computing that can be relied upon to drive everyone completely round the twist it's the dreaded manual.

Now Mirrorsoft has come up with an alternative to the great time-wasting device. It's based on the circular slide-rule format and gives computer users a chance against the barrage of technical gobbledegook they are forced to endure.

The first hand-held 'Wheel Ease' is based on MS-DOS. If, for instance, you need to find out how to back-up a file, simply turn the disk to the appropriate entry, and the correct listing will appear.

Mirrorsoft is planning similar wheels for Lotus 1-2-3, *WordPerfect* and *WordStar*. They cost £9.99 each, and will be sold through Dixons. ■

• Round in circles: save manual labour

KGB-HACKER CATCHER IN LONDON FOR LAUNCH

Hacker-catcher Clifford Stoll was in England last week for the launch of both his new book and a television programme based on his exploits.

The man who tracked down the infamous 'KGB hackers' has lost little time in publicising the extraordinary events which led to arrest of five West German alleged computer criminals.

His book, *The Cuckoo's Egg*, details the cat-and-mouse chase across computer networks around the world. It also looks into the deals supposedly struck between the young hackers and the KGB and the strained correspondences between Stoll and the CIA.

Stoll, something of an unusual character, turned detective two years ago after spotting discrepancies in the computer system he worked with at the University of California. The alleged hackers he trapped are currently standing trial in West Germany.

Three of them face prison sentences, one has turned state's evidence and the other committed suicide last year. That suicide has since attracted a number of conspiracy theories, most of which seem to come straight out of the world of James Bond.

At the press conference Stoll amazed gathered journalists by announcing that he had swapped E-mail numbers with one of the German hackers when they had met in the courtroom during the trial. Both promised get in contact with each other when all the media fuss has died down.

"I expected to meet a mechanical being but instead I found a real human being," said a surprised Stoll.

The Cuckoo's Egg costs £12.95. A half-hour television show called *Science Fiction*, in which Stoll stars in a dramatised version of the story, is due to be screened next month. ■

• Stoll: in London last week

WINNER OF OUR DISK CONTENT

• The complete works of William Shakespeare are to be released on a single CD-ROM disk for the IBM PC and its clones.

That will include 37 plays, five poems and 154 sonnets. Users will also be able to search out any part of the disk they need – every reference to Falstaff for instance. Shakespeare on Disc comes from Research Incorporated in the States and costs $99. ■

Team spirit

Remember Mr T, Hannibal, Murdoch and Face, otherwise know as The A-Team? Well now they are back in a new computer game based on the once-popular series.

Youngsters all over the country will soon be able to control their mercenary heroes in a game from The Edge. Although the A-Team's TV-generated popularity has passed its peak, The Edge claims that the characters haven't yet lost their appeal.

The licence for The A-Team had already been bought by a rival software house. However, the un-named company had failed to act on the scoop. The Edge quickly took advantage of this opportunity.

A shopping spree by The Edge has left the firm with big name licences such as Snoopy, Asterix and The Punisher as well as old stalwart Garfield.

The A-Team should be released later this year on all major home micro formats. ■

• *Winners: Liverpool gets another game.*

Ocean goes to Anfield

Liverpool Football Club is to star in a new game from top software house Ocean.

The football management and arcade action combination should arrive late next month. It will be the latest in a long line of spin-off games based around Anfield.

Grand Slam also has the rights to Liverpool – it has the endorsements of all the players while Ocean has that of the club.

Grand Slam has also released games based on Liverpool player Peter Beardsley, and there are three games based on Liverpool manager Kenny Dalglish – those titles are published by Impressions.

To add to the confusion, a small company, Video Images, announced early last year that it had the rights to produce a game based on Liverpool Football Club. Whether or not that firm is still involved in the Ocean project is not clear at present.

Whatever, *The Official Liverpool FC Soccer* promises to be a corking-good football game. ■

Souped-up PPC planned for spring release

AMSTRAD TO LAUNCH NEW PORTABLE PC

Amstrad will launch a new IBM-compatible portable computer in the spring, *Express* can reveal.

The machine will be a souped-up version of the PPC incorporating new screen technology. It will cost £1,500 and will include a 40Mb hard disk. Sources close to Amstrad's development team say the new screen is a vast improvement on that of the PPC.

Amstrad had hoped to launch its new machine at the *Which Computer?* Show in April – the year's premier showcase for serious computing. However, developers are finding that deadline difficult to meet and Amstrad may have to confine itself to a preview.

Unsurprisingly, Amstrad is not yet prepared to talk openly about the project. A spokesman told *Express:* "As far as I'm concerned we have no plans to launch anything in April. But these things can change, and if and when there's a launch date we can start talking."

The new portable will feature a 'clam-shell' case but, but otherwise the design will be similar to that of its two-year-old predecessor.

A major feature of the new portable will be its screen. The PPC has been heavily criticised for its poor display quality and steps have been taken to rectify that defect.

Curiously, Amstrad was last week preparing itself for a Valentine's Day press conference. Speculation in the trade is rife as to the nature of the conference – especially given that the firm rarely launches anything except at the big name shows.

But any hardware launches are most unlikely. Amstrad says it will be announcing a "major initiative of particular interest to the end-user and dealer channel" and has branded rumours of hardware launches as nonsense.

Apart from the portable, Amstrad is also reported to be working on a new line-up of top-end PCs. They will be called the 3000 series and will feature a number of 286, 386 and 386sx models.

Amstrad feels that the 2000 series suffered an image crisis following the widely reported technical foul-ups of last year. The firm wants to introduce a rugged range which will be perceived as a high-quality purchase. The 3000s will boast metal cases and will be slightly faster than the 2000 models. ■

• *PPC: new model soon out soon with improved display.*

• A special version of the PC1640 is to be launched in Moscow next month. Amstrad is taking a stand at the Comtek '90 show – the largest-ever computer exhibition in a communist country.

Amstrad is contemplating the possibility of bundling Locomotive's PC version of *LocoScript* with the Russian machine because of its Cyrillic option.

Let's hear it for the little guys

In these days of power conglomerates, multi-market publishing and huge corporations it's getting tough for budding software developers to break through.

One small company reckons it has the qualities needed to take on the big boys. Gonzo Games has been set up by four programmers who previously worked as Viz Design.

Gonzo will be concentrating on original ideas and steering clear of expensive licences. Acording to the firm: "If all you're left with at the end of a hard day's joystick waggling is a free badge and a share in the megahype then you're going to want to find something better to do with your time."

The company's Paul Smith said: "We've been around, we know it's tough, but we'll be fighting."

The first game due is *Wipe Out* – an "inter-galactic hoverboard challenge". It will be out on the ST and Amiga next month for £19.95. ■

• *Wipe Out: set to beach the big boys?*

Sony's portable CD book

Sony is to launch an electronic book which incorporates Compact Disc technology.

The 550 gram machine will be slightly larger than a normal paperback book with text displayed on an LCD screen. Users will be offered a variety of books on Compact Disc. Each disk will hold about 200Mb of text.

The Sony Walkbook will also be able to play audio CDs. However, the firm is not prepared to say how much it will cost or when it will be available.

Sony leads the way in CD developments. The Japanese giant is about to launch a CD player which can record music, and won't cost much more than current models. ■

Writer sues over stress

A journalist has sued press agency Reuters for damages over Repetitive Strain Injury – a recently recognised condition caused by overuse of computer keyboards.

Rafiq Mughal was the chief sub-editor on the equities desk at Reuters – a job which entailed long periods of typing into a word processor. He says he can no longer drive a car and will have to wear splints on his hands for at least the next year.

RSI is suffered by those people who spend hours typing without a rest. Mechanical typists have to stop to move carriages and change paper so the repetition of simple typing is eased. But since word processors are automated, today's typists are confined to banging away at only the keyboard thus straining muscles in the arm. It is thought that hundreds of cases will be brought against companies over the next few years.

The National Union of Journalists is especially concerned about this new trend and will be backing Mughal. He is the first journalist to take legal action against an employer. ■

The Cold War continues

US Defence Secretary Dick Cheney has warned President Bush to keep a strict control over the amount of technology which can be allowed into the Eastern bloc.

Recent changes in the political climate have prompted Western Governments to consider revising their policies concerning exports of computer technology. Until recently the American Government would not allow any desktop computers more sophisticated than an XT into Eastern Europe.

Most senior American politicians believe exports of much needed computers will help to revive newly democratized economies. But Cheney says the technology is still too sensitive.

A decision on the future direction of technological sanctions will be made before the spring. ■

It's a small World

A conference on computer viruses is to be held in London later this month.

Concern in major establishments over the menace has been intensified by the so-called AIDS virus which hit the UK in December. The seminar organiser is hoping to attract professionals – tickets for the conference cost a weighty £235.

The organiser of the show is none other than *PC Business World* magazine. Regular readers of *Express* may remember that the dmagazine was conned by the AIDS virus ditributor into selling him his mailing list, which he used to target victims. ■

Smallest footprint desktop will be made in UK

THE SPACE RACE HAS ITS VICTOR

Victor UK intends to jostle its way to the front of the desk-space race this year with a series of PC models which boast 'the smallest footprint of any IBM-compatible desktop microcomputer currently available'.

Following its recent merger with $4-billion US giant Tandy, Victor has ambitiously set its sights on doubling its 4.8 per cent share of the European PC market by the end of the year.

The company is pinning much of its hopes on its new M Series of PCs, a range of micro-tower systems all featuring a highly-compact main unit chassis measuring just 322 x 114 x 312mm (13 x 4.5 x 12.5 inches). The box is only just wide enough to accommodate a standard 3.5-inch disk drive.

The series features 12MHz 286, 16MHz 386SX and 25MHz 386 processors, as well as an entry-level 10MHz 8086 model, all generically tagged by the company as 'The Lean Machine'.

With an embedded hard disk controller and built-in VGA adapter, external floppy disk interface, SIMM sockets and ports (two serial and one parallel), all of the M Series models feature three genuinely free expansion slots. Each is available in mono and colour VGA.

Hard disks for the series range from 20Mb to 600Mb, and all machines except the entry-level V86M will accommodate additional removable hard disks known as Add-Paks.

"We are introducing products which are truly revolutionary in both size and technology," says Victor UK managing director Bob Webb of the British-designed series. "We've trimmed the fat off computing in design and pricing, but they are the only cutbacks we've made."

Victor has announced that all of the New Dimensions range – there is also a 33MHz 386 file server with a 486 model to come – will be manufactured, as well as assembled and tested, entirely within the United Kingdom.

March 1 has been set as the launch date for the V86M, V286M and V386MX (SX) models, with the V386M scheduled to follow in May.

Prices run from £999 for a mono 20Mb 8086 model, from £1,799 on the 286 and from £1,999 on the SX (each with 40Mb hard disks). Optional 40Mb Add-Paks will come in at £549.

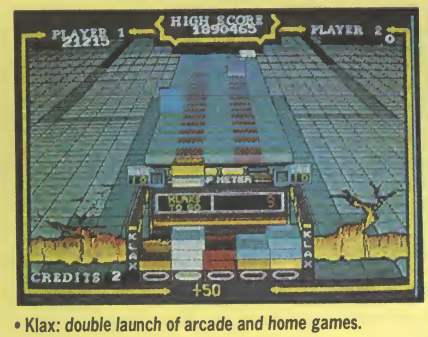
• All of Victor's M Series will look like the V286M pictured – only the internal motherboards and hard disks are different.

Arcade and home micro games launched together

Domark and Atari Games have teamed up for the first simultaneous launch of a computer and arcade title.

Klax is a simple and addictive variant on the noughts-and-crosses theme. Players must catch coloured tiles and flip them into bins thus making stacks.

The two the companies reckon the game will emulate the success of the block-building hit Tetris. That was quickly snapped up by the arcade manufacturers because of its original concept.



• Klax: double launch of arcade and home games.

Atari Games and Domark have been close business partners for years.

The game will be out on PC, C64, ST, Amiga and the arcades in April. ■

US Gold's spooky bug

US Gold suffered a ghost in its machinery recently when faulty copies of hit game *Ghouls 'n' Ghosts* were sent out.

Owners of Kickstart 1.3 version Amigas found that the game was incompatible with their new machines and were soon beating a path to US Gold's returns department.

A last-minute hitch had caused the problem but the firm moved quickly and had the games recalled from shops around the country. A new fixed version has now been issued.

Ghouls 'n' Ghosts is the follow-up to the massive 1986 hit *Ghosts 'n' Goblins*, and is currently at number eight in the Gallup chart. ■

Brazil clamps down on pirates under US pressure

By TIM SMITH

The heyday of Brazilian software pirates is over. For the first time legal software packages outnumber illegal copies.

According to *The Financial Times*, until recently illegal software packages outnumbered legal ones by ten to one.

The rot had set in so deeply that large companies and even government ministries were openly using black-market software. It has taken heavy pressure from Washington, as well as a concerted effort from the Brazilian financial and software associations, to put a stop to this.

This has taken such a commanding hold that 1989 software sales are estimated to be in the region of US$100m as opposed to 1988's meagre US$30m – a 230 per cent rise.

One of the main reasons behind what had almost become a national custom of using stolen software was the atrocious condition of Brazil's economy. Software houses, such as Lotus (producer of the hugely successful *1-2-3* spreadsheet) normally see such economic chaos as a god-send to sales – companies computerise in order to cut costs and speed profitable turnover – but high inflation meant that genuine packages were priced out of their own markets.

Although Brazil was operating a highly-protectionist trade policy in relation to computer hardware, software was another and more complex proposition. The law relating to it was vague to say the least.

So, in 1985 the USA began an all-out campaign against Brazilian hardware 'market reserve' (protectionism) and the South Americans were forced to reconsider the software angle. New legislation, including tighter copyright laws, was finally introduced in 1988. Software copying is now illegal and imported software can only come into the country if it is deigned to not be 'similar' to home produce.

But Brazilian software houses are still unhappy. The 'look-and-feel' policy against imports has only seen 1.2 per cent of foreign software rejected. Two local firms, Cobra and Scopus, are even now attempting to stop the giant US firm AT&T from selling the Unix operating system in the country. They claim that the Brazilian SOX operating system which is under development would be adversely affected.

Not playing the game

Wholesale game and toy distributors in Japan have been accused of forcing customers to buy unpopular games in order to get the latest releases and game machines.

Fair Trade Commissioners investigating six wholesalers revealed that retailers have been forced to buy software cartridges for the Nintendo Famicon game machine in order to get a supply of their hand-held Gameboy machines. Last year 1.5 million Gameboys were sold in Japan, with a further 1.1 million in the USA.

In another incident, a wholesale store sent faxes to retailers telling them they could get 100 packages of *Dragon Quest IV* in return for buying 229 less-popular cartridges. About to be released in Japan this month, first day sales of *Dragon Quest IV* are expected to reach 1.3 million.

A previous scandal involving *Dragon Quest III* led to Enix banning tie-in deals, and Nintendo has also written to wholesalers about bundling games. (Newsbytes)

CD-ROM drive for portables

The first truly portable, fully-specified CD-ROM drive was announced last week by NEC Computer Peripherals.

Called the CDR-35 and retailing for £399, it has full error correction, buffered data transfer and rapid access and data transmission speeds.

It is supplied with SCSI interface and a mains adapter as standard and, with an optional battery pack, is said to be ideal for luggable and laptop PCs. The drive measures 21 x 14 x 6cm approx and weighs 1kg without batteries.

The CDR-35 will provide access to vast information stores (medical or financial records for instance), and will interface with IBM AT and IBM PS/2 plus their compatibles, Apple Macintosh, and NEC ProSpeed and Ultralite laptops.

Two software packages for the CDR-35, *Image Folio* and *Clip Art 3D*, have already been released by NEC.

Commodore tight-lipped on top-end machines

NEW AMIGAS SHOWN AT SECRET MEETING

Commodore and a party of industry friends and colleagues were last week enjoying a few days in Paris for a sneak preview of two new top-end Amigas.

Secretive Commodore made sure all viewers had signed a strict non-disclosure agreement before they wheeled out the two machines – but details have already been leaked to *Express*.

The beefier of the two machines – codenamed the Amiga 3500 – will not run the new 68040 chip as some had hoped but will stick to the 68030. It will run at 25MHz and have 2Mb of RAM on board, with the option of expansion up to 8Mb. As previously predicted it will utilise an asynchronous clock design which will allow users to plug in a fast clock oscillator and RAM which will speed the machine up considerably. Software developers were given the chance to experiment with this feature.

The lesser machine is the Amiga 3000, which runs at 16MHz. Commodore originally inteded only to sell a 25MHz machine, but it believes there will be demand for a cheaper model.

Both machines will be shown to the public for the first time next month at Europe's biggest computer show – Hanover's CeBit – and will be on sale shortly afterwards.

They will boast an on-board SCSI hard drive controller, as well as fast direct memory access channels and an optional Unix card costing more than £1,000.

• Amiga 2000: upgrades shown in secret.

Monty Mole is back!

Monty Mole, star of countless computer games, has decided to come out of retirement for a massive comeback.

The hero of the mid-1980s has dug himself out of obscurity and is preparing for a new game. Publisher Gremlin has been given the job of recreating the heady days of 1984 when Monty first burst into the limelight. The firm is working around the clock producing trinkets such as Monty T-shirts, mugs, posters and duvet cover. Monty himself is in negotiations with television producers, with a cartoon series on the agenda.

Monty's biggest hits were *Monty is Innocent*, *Monty on the Run* and *Auf Weidersehen Monty*. A new game should be launched in the spring. Monty is best known for games based in coal mines.

• Monty: into the Nineties

Hooligans on video

Interactive video programs are being used by Scottish police to prepare them for the perils of policing football matches.

The trainee policemen and women have to make decisions based on what they see on the screen. The consequences of their decisions are then shown in the film.

The program was put together by the National Computing Centre at a cost of £100,000. The police say it's impossible to spend time training cadets in tricky situations such as large football matches, so the computerised version will be valuable.

The NCC used real footage of football hooliganism to make the video.

Lotus and VP Planner's 'look and feel' showdown

PLAGIARISM CASE HITS BOSTON COURT

The bitter two-year-old legal battle between Lotus Developments and Paperback Software has finally reached the courts.

Lotus alleges copyright infringement against Paperback and Mosaic in the US. The market-leading company says those two companies released spreadsheets almost identical to its own best-selling program Lotus *1-2-3*.

There is no question of code theft being involved. The only allegation is that the two defending companies took the 'look and feel' of *1-2-3* and transferred it to their own programs.

The judge is being invited to look closely at all three programs. Most interesting is *VP Planner* from Paperback which has sold extremely well here in the UK. Lotus will attempt to draw comparisons between the two while Paperback says they are as different as spreadsheets can be.

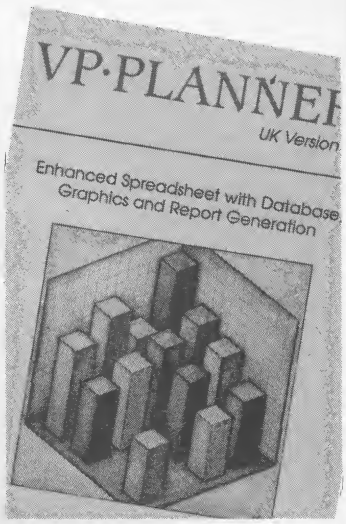
Lotus says that because the user interfaces of the two programs are similar its copyrights have been infringed.

If Lotus wins it could pave the way for hundreds of 'look and feel' cases. Computer owners are well aware that software publishers usually settle for the most popular user interface which then becomes the standard.

It could also blow the top off the games industry where plagiarism has always been rife.

Even so, Paperback says *VP Planner* does not even look like *1-2-3*. Insiders suggest that if Lotus loses its case a huge writ will be slapped on the firm for degrading *VP Planner* in front of the public by suggesting that it is a copy.

At the court in Boston, Massachusetts, the participant and the judge saw a demonstration of all the programs. A decision is likely to be made within a fortnight. ■



• VP Planner: *look and feel*

Money for nothing?

An Australian doctor has been accused in the Federal Parliament of swindling A$750,000 out of his patients, by selling them 'speculative investments' software.

Claiming to have spent six years writing the program in BASIC on his Commodore PC, Dr John Page insists he is still holding talks with interested investors.

His system is said to pay 20 per cent interest per month on investments spread over stock exchanges, futures markets and even horse racing, while reducing the risk to almost zero.

"All 17 investors have been paid interest according to their individual agreements," stressed Dr Page. "As far as I am concerned the system is sold. We are just just waiting for the money to come through." ■
(Newsbytes)

Protection on the box

The Data Protection Registrar, Eric Howe, has decided to advertise his services on TV.

"It is no joke if you are the victim of misleading computer data," Howe said. "Complaints are running at a rate of 1,600 a year and we believe the indications are that these numbers will continue to grow."

The first of five 40-second commercials were shown on Granada TV on February 9.

All five spots employ professional actors to depict real life situations: a man who is arrested for stealing his own car; the danger when medical records omit the fact that a patient is allergic to a drug; a man who was refused a loan because computer records incorrectly showed a court judgement against him; a woman who was turned down as a foster mother; and a woman whose building society wrongly thought she had been dead for three years.

"This is our first use of television advertising," Howe commented. "We have used many other media of publicity to tell people about their rights under the Data Protection Act, but research shows that there is still a large number who do not know that we can help them." ■

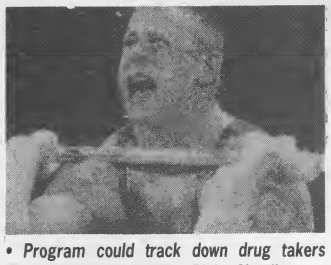
Program can beat sports cheats

A computer program has been developed for the PC which could be used in the fight against steroid drug-taking among sports men and women.

The program simply relies on a steady stream of data input based on the performances of athletes. It can then analyse the figures and show anomalies. It is hoped that the program will be used for positive training techniques – for instance, the analysis could tell trainers under which conditions athletes run best.

But it is thought that the computer program will be used to catch out any potential cheats. It could, for instance, pick up improvements in the performances of an older athlete. This could be for innocent reasons – or it could be down to drug taking.

Denis Adams, a lecturer at Liverpool Polytechnic devised the program. ■



• *Program could track down drug takers such as Welsh weightlifter Ricky Chaplin.*

• *£199 for a complete word processing system from Crown.*

Crown tops low-end market with £200 word processor

Crown Computer Products is launching a complete word processing and spreadsheet system for just £199.

Combining the Sanyo MBC 555/2 and the Olivetti DM 100, the new system offers a computer, monitor, printer and start-up software in a package equally suitable for home, education or small-business use.

Crown's managing director Malcolm Jamieson announced, "This is extremely good value for money when you consider that you can compare it to other systems priced well over £1,000."

Although the Sanyo MBC 555/2 is not a 100 per cent PC compatible machine, at half the price of the cheapest Amstrad PC1512 it could be a bargain back-up system or a viable stand-alone word processor. ■

News in brief

• Next week sees the launch of *PC Tools Deluxe 6*. It's the latest version of the useful utility package which includes a variety of programs. Publisher Central Point claims it has sold 600,000 units in the past 12 months.

• European Electronic Zoo is about to release a compilation of IBM games. *Top 10 Solid Gold* will include such hits as *Super Huey* and *DefCon 5* along with *Navcom 6*, *Corporate Raider*, *Inside Trader* and *Doodle*.

Top 10 requires 256K of memory and is available on both 5.25- and 3.5-inch floppy disk. It retails for £19.99 and is available now. ■

'Voice mail' heralds a new kind of communication

Now you can ring up your PC from a call box and have it recite the latest sales figures to you down the phone – without the use of a modem.

The latest add-on board for the PC lets you operate the computer remotely by issuing commands using a tone dialing phone. The micro then replies directly using a speech synthesiser.

Systems Connections, the manufacturer of the board, sees the system being used for 'voice mail', which it reckons will remove the need for a human receptionist and answering machine. Voice messages can be sent in exactly the same way as E-mail messages. Users will have a voice mailbox and can send short missives to other users. A link to a pager will alert users to incoming mail.

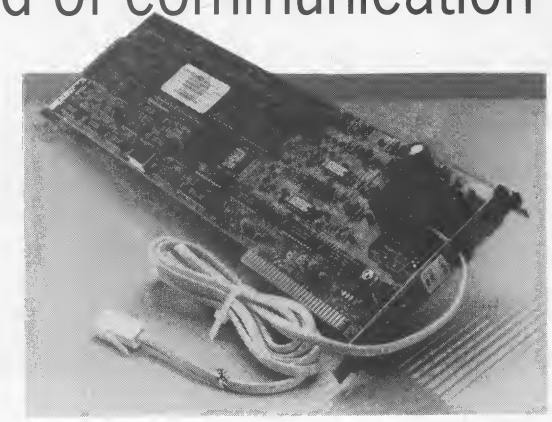
The firm believes that the voice mail market will be worth £80 million in the UK in two years.

Another current use for the system is for the kind of home transaction service offered by some banks. You can send instructions to the computer and receive information via the voice synthesiser.

The system also allows you to digitise spoken messages which can then be replayed to callers. Different massages can be given depending on the tone-dialled code entered by the caller.

Systems Connections claims that no advanced skills are required to program the board to create customised applications, and says that no programming experience whatsoever is required.

The board, plus development software, costs a huge £1,495, but this is the first of many, undoubtedly cheaper, systems to come. ■



• System Connections' Tone Talker board.

It's 10 years since Sir Clive's budget home micro

ZX80: STILL 'A GOOD JOB' AFTER A DECADE

Ten years ago this month Britain's first affordable home computer was launched by Sinclair. The ZX80 had 1K of memory and cost £100.

The landmark anniversary has gone by almost un-mentioned in the press. Even Sir Clive had forgotten all about it. Last week he told *Express*: "It hadn't really crossed my mind. I don't think there will be any celebrations."

How does he feel about the machine 10 years on? "Ah, with a great deal of affection. I feel very proud of it now. It was a good job." But his favourite machine of the past decade is its successor, the ZX81. "It was an evolution of the ZX80 and not really a new machine. But I remember being very proud at the launch." He added: "I have to say that the Z88 is an excellent machine".

Other than his own creations Sir Clive's favourite computer is the Apple Macintosh.

Had home computing turned out as he had anticipated? "No, not at all. When I introduced the ZX80 I rather expected people to buy it and learn programming. I expected some games playing but not in the way that it took off. It's not that I despise games, but it's a big disappointment that they've been so pervading."

And the future? "Ha ha. I've got lots of computers planned. But I can't talk about them." Even so, he predicted that the PC-compatible Z88 would be ready for the autumn. ■

• Sir Clive: 10 years of home computing.

Who's listening?

If a new American system catches on in the UK, no one need ever again ask, 'Who's calling?' – because the phone will have told them via a loudspeaker before they've even picked it up.

When linked to a database the caller ID system can call up all manner of personal information about the person on the other end of the line, including their credit history, income and buying habits. It's already being installed in half a dozen American states – but not without a fight.

Marketing companies are delighted. Congress is worried about invasions of privacy. Pennsylvania has banned it pending legal hearings. And in New Jersey, where the system has been in operation for a year, obscene phone calls are virtually a thing of the past. ■

• Mark Stephenson, right, a young Londoner from Wapping, is the first to benefit from Commodore Business Machine's PC Starter Pack initiative – as a tribute to his own business sense. He received his prize from Commodore's Steve Franklin.

In April 1989 26-year-old Mark won a competition to submit the most brilliant new business idea in London. Now Mark has set up his own company, Raw Power Music – which hires out quality public address systems for rock concerts. ■

Getting the Knowledge

Clares Micro Supplies has launched the *Knowledge Organiser* for the Archimedes.

The £59.95 follow-up to *ArcTFS*, *KO* is billed as an ideal tool for research, revision, investigation or any application which involves filing data that does not readily conform to the constraints of a normal database.

Data for *KO* is entered as a text file, and retrieved by entering a keyword, which pulls up all references containing that keyword.

KO also has a built in editor and it can import direct from the Z88 via a serial port. It is available now. Call 0606 48511. ■

SPA sets up in Paris

The influential Software Publishers' Association has opened a European office in Paris. Its aims are to promote the software industry throughout the continent.

The organisation was originally set up in in 1984 by 25 companies operating in the American PC market. Now it covers all major computer formats and has 140 members.

Over the past five years the SPA has proved to be indispensible, publishing important market research and fighting piracy. It has even managed to push copyright legislation through in Washington.

SPA hopes that the European office will make it a world-wide body for software publishers and users. The American companies which largely make up the organisation hope to take advantage of the much talked about European marketplace. ■

ComputerLand USSR

Retail chain ComputerLand is following the example of McDonalds and Pizza Hut by opening a store in Moscow.

The firm hopes to sell thousands of PCs to the largest untapped computer market in the world. ComputerLand Moscow opens in four weeks. ■

COMMENT

With the release of Nelson Mandela, should software houses look again at trading links with the apartheid republic?

Thoughts this Monday morning drifted frequently to South Africa, and to the live pictures we had been watching the day before of Nelson Mandela at last standing in the street a free man – for whatever that phrase can actually be worth to a black person in the apartheid state.

By a happy coincidence, that morning I received a letter from Jon Knox and Andy Reece of Interactive Pixels, sent before Mandela's release, but in my opinion no less relevant for it.

As it was never the intention of my publishers that this column should be restricted to the 'official opinion' of *Express*, I make no apologies for reprinting the letter below:

"On a point of information about your news item 'No to South African games trade', can I clarify a fact: Pete Lyon does not have a clause in his contract with us that stipulates that his work cannot be sold in the Republic of South Africa.

"The clause banning RSA distribution of *Dynamic Debugger* was from the programmers (us!) and was written into our contract with the publisher before we met Pete.

"Nevertheless, thanks for raising the matter, and your sympathetic write-up. We both believe that sanctions work, and reject Mrs T's fiction that de Klerk's promised dialogue results from constructive engagement: it is from pressure from other countries – every other member of the Commonwealth, for instance.

"We know of games programmers having RSA bans in their contracts at least five years ago, but they didn't think of asking their publishers' marketing departments to add distribution territory clauses to their advertising copy. We are thankful to Mirrorsoft for allowing this to be done on our work, and more recently on Gravity's.

"Other programmers who do not want their software to join Gatting as British exports to entertain the few in a country which supports constitutionalised racism, and in which 85 per cent of the populace have no say in how they are governed, should get their publishers to add territory restrictions to their game's packaging.

"Perhaps some of the leading figures in the industry would like to tell *Express* whether the software companies they represent are in favour of these actions."

For what it is worth, I happen to think that Jon and Andy are quite right.

I understand the view that preventing games from reaching South Africa will largely affect children, and that it is unfair to visit the sins of their parents upon them. After all, no one can choose the society they are born into.

But there is also a less facile angle to this, which is that the ignorance in which South African children grow up is something which serves to perpetuate the apartheid system.

Depriving people of computer games will not directly educate them about the evils of their society, but the cumulative effects of leaving the republic out in the cold – sport and entertainment in general being particularly overt boycotts – must eventually press home the point that the rest of the world despises the South African system.

'Daddy, why won't they let us play their games?' is a question we should not regret forcing those children to ask.

Express Mail is open, as ever, to public and industry views on the morality of supplying software both to South Africa and to other dubious regimes.

Martyn Lester, Editor.

FROM The ARCHIVE

ONE YEAR AGO

Opus announced it was launching low cost 286 and 386 PCs which would be "within the reach of anyone contemplating buying an XT, but really wanting a 286 or 386".

The PCIV 286 was to sell at a little over £1,000 and the PCV 386 would be the first to break the £2,000 barrier. Since when, of course, with prices falling across the board, a 386SX can be picked up for under £1,000.

So what's wrong with progress?

Sheffield-based, Gremlin programmer Colin Dooley shot to overnight, and possibly underarm, fame as Fungus the Bogeyman.

He apparently became so attached to his hacker handle of 'Fungus', acquired during his university days, that he change his name by deed poll – an event which even made the national papers.

During his time at Gremlin he had, apparently, worked on such projects as *Venom Strikes Back* and more worryingly *Gary Lineker's Superskills*. Not that we're attributing any loss of form during the early part of the season...

Weekly magazine *Computer Gamesweek* was shown the red card and received the early bath – although for a while it continued as a 24-page supplement in its sister publication *Popular Computing Weekly*

It was announced that the Manchester-based Amstrad Northern Show would be discontinued through lack of interest. The show, which had been runing for three years, had never made a profit.

This heralded sweeping changes on the computer show circuit and the calendar has since been rewritten.

Following its decision the previous week to stop selling business-oriented software and concentrate on the leisure market, it was rumoured that W H Smith – already reduced to stocking only the Atari ST in its larger branches – might stop selling computers altogether.

And verily, it came to pass. Which is a shame really, since it was the first major British chain to stock the Sinclair ZX81 back in the early 1980s...

TWO YEARS AGO

It was dreamtime for the chaps at Amstrad, who once again "confounded pundits, analysts and critics alike" by announcing another huge leap in profits – June to December 1987 realised £5 million more than the City's prediction of £85 million, and nearly £20 million more than the equivalent period in 1986.

Chairman Alan Sugar marked the occasion by officially announcing the launch of the German subsidiary, to coincide with the cessation of its deal with Schneider. Since when, old friends have fallen out somewhat.

Amstrad was also in the news following its announcement of a networking system which would be launched the following autumn. The firm was aiming at a sub-£500 pricepoint – which was achieved. Not the least interesting feature of this story was the fact that an official announcement so far ahead of product launch was so unusual.

Britain's games software houses were all creeping to the BBC with a view to getting their fingers on the licence for *A Question of Sport*. Aunty Beeb required detailed submissions from software houses outlining ideas concerning gameplay. The BBC didn't want to chuck its 18-year old show to just any old company. From the dozen companies bidding for the deal came one winner – Elite.

Sources: *New Computer Express, Computer Weekly, Computer Trade Weekly, MicroScope, PC Dealer, Computer Talk, Datalink.*

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KEYBUKING THE SYSTEM

If you have version 3.3 of PC or MS-DOS you may have trouble with its interaction with your BIOS. The keyboard driver in version 3.3 has been completely rewritten to make use of code pages. A code page is a table of characters corresponding to those used in each of the common languages. You could, for instance, choose the characters suitable for a French keyboard which has a different layout (AZERTY).

In actual fact, most of these different character sets come from the same code page – so at the moment there is little advantage in using them. There's a definite disadvantage if your BIOS disagrees with the driver. The solution is simple – run the KEYBUK driver from an earlier version of DOS; 3.2 or below. This will work just as well and doesn't seem to produce a conflict.

ERRONEOUS COMPARISONS

If you have copied one disk to another and labelled one of the volumes – using the MS-DOS `LABEL` command – you will find that a comparison of the two disks, using `DISKCOMP`, produces an error. The `LABEL` command itself creates a hidden file of zero bytes, the directory entry of which is the volume name. This also accounts for the restriction to 11 characters for the name – it's the filename and file extension of the hidden file.

DIY HARD DISK PACK

Datamation services, whose remarkably interesting products I've mentioned here before, have come up with a new goody. It's a 5.25-inch carrier frame which will fit any standard PC drive slot of that width, to carry just about any 3.5-inch hard drive you can imagine.

The carrier comes complete with a keylock, and it can be removed from the machine while the PC is on, so you could swap drives with different applications or data on them during a session.

The uses of this kind of device are as numerous as for any removable drive. The most obvious is to carry data with you in one unit, perhaps from office to home and back. Another application that Datamation quote is for renewing data in Electronic Point-Of-Sale (EPOS) terminals. Slip in a replacement hard disk and a whole network of electronic tills can be updated at a stroke.

The hard drive carrier costs around £60 plus VAT. You can supply the drive yourself, or buy one from Datamation with the carrier for £250 or so.

You will need a hard drive controller, but many machines come with one fitted, and most controller cards can run two hard drives. Datamation has moved recently, and is now on 0753 696499.

FREEWAY SHAREWARE

Freeway software dropped in a press release for its improved Retailers Cashbook program. This package now includes income and expenditure reports as well as the ability to deal with the VAT cash accounting scheme. It has other features clearly aimed at pushing it towards the corporate market.

All of this is very interesting, but perhaps more interesting is that the program is still going to be marketed as shareware. You can pick up a fully functional evaluation copy for £15, direct from Freeway. Try ringing 0257 472010 for more details.

ORIGINAL POPCORN

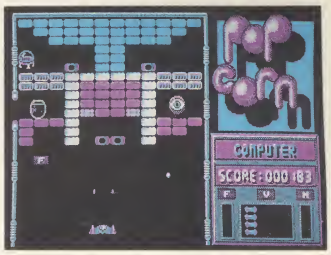
As I've also mentioned before in this column, one of the things that earns me pennies is putting together the *PCPLUS* SuperDisk every month.

I was recently sent a selection of games for the disk that were taken from the Public Domain by the contributor, who was asking a finder's fee for his efforts. This is fair enough; the problem comes in trying to check that the programs are indeed PD.

The contributor concerned obtained them from regular PD sources, and I'm sure they passed the software on in good faith. It's just that the games in question are extraordinarily good – quite up to commercial standards.

So, if anyone out there knows anything about a French game called *Popcorn* from Lacral software, released in 1988, could you let me know? It would be nice to share it with users of the SuperDisk, but not so nice to receive a huge lawsuit for breaking the copyright!

Simon Williams



• **Popcorn: *popping up on PD***

COLOUR SAMPLES

If you're involved in producing software which will run on a wide range of PCs, one of the things you have to watch for is the colour schemes you choose for your text screens.

How ever well your instructions are written and however well-designed your title screens are, they will be as nothing if the colours you've chosen render the text unreadable.

The simple solution to this is to check the colour schemes on a range of different monitors – assuming you have them to hand or that you can get them to hand, of course.

I don't have a range of monitors to hand, but through the good offices of the readers of NCE I hope to put together a pretty comprehensive list of what we can all see on our respective screens. I'll then publish the results, which will, perhaps, benefit software designers on the one hand, and myself as compiler of the *PC PLUS* SuperDisk on the other.

All you have to do is type in the following listing, which will work under GW BASIC, QuickBASIC and possibly Turbo BASIC as well (I haven't tested).

It should, all things being well, produce a table of the 128 foreground and background colour combinations available in text mode on the PC.

```
CLS
RESTORE
PRINT ".........Black.Blue..Green.Cyan..Red...Mag...Brown...Grey"
FOR m% = 0 TO 15
READ colname$
COLOR 7, 0
PRINT CHR$(13); colname$;
FOR n% = 0 TO 7
COLOR m%, n%
PRINT TAB(n% * 6 + 10); " TEST ";
NEXT n%
NEXT m%
DATA Black,Blue,Green,Cyan,Red,Magenta,Brown,Grey,B.Black,
B.Blue,B.Green,B.Cyan,B.Red,B.Magenta,B.Brown,B.Grey
```

The dots in the first print statement should be replaced by the same number of spaces. The data in the last statement is one long list. Save the program as `COLTEST.BAS`.

What I would like you to do, if you run QuickBASIC or Turbo BASIC is to compile the program and run the resulting EXE program, redirecting its output to your printer with the command `COLTEST > LPT1`.

If you're running the test under GW BASIC, you'll need to replace the PRINT statements with LPRINT.

Either technique should produce a printed table with the columns and rows labelled with their respective colours.

If you then run the program as printed here, you can study the display it produces and strike out on the printout any colour combinations which are unreadable on your screen. Then please write on the printout the name of your PC, the type of display adapter you have fitted to it, and the monitor you run it with and send the sheet to me at Readability Survey, PC column, NCE, Beauford Court, 30 Monmouth Street, Bath BA1 2AP.

	Black	Blue	Green	Cyan	Red	Mag	Brown	Grey
Black			TEST	TEST			TEST	TEST
Blue			TEST	TEST			TEST	TEST
Green	TEST	TEST						
Cyan	TEST	TEST						
Red			TEST	TEST				TEST
Magenta	TEST							TEST
Brown	TEST							TEST
Grey	TEST	TEST	TEST		TEST	TEST	TEST	
B.Black							TEST	TEST
B.Blue	TEST						TEST	TEST
B.Green	TEST	TEST			TEST	TEST	TEST	
B.Cyan	TEST	TEST			TEST	TEST	TEST	
B.Red	TEST	TEST	TEST	TEST	TEST	TEST		TEST
B.Magenta	TEST	TEST	TEST	TEST	TEST	TEST	TEST	
B.Brown	TEST	TEST	TEST	TEST	TEST	TEST	TEST	TEST
B.Grey	TEST	TEST	TEST	TEST	TEST	TEST	TEST	TEST

PC GAME of the WEEK

CONQUEROR

Rainbow Arts • £24.99

David Braben has been very good for Acorn Computers. He co-authored *Elite*, which demonstrated just what could be done in the BBC B's paltry 32K of memory. He then wrote *Zarch*, which became the standard demonstration of the machine's graphic power.

Very nice for Acorn, but these games have since been translated to other machines, including the humble PC. Indeed *Virus*, as *Zarch* is called in other guises, provides a pretty good demonstration of EGA graphics on a reasonably nippy 286 or 386 machine.

Conqueror, although not actually written by Braben, looks like it has been developed from Braben groundwork because it too has amazing 3D graphic routines. Furthermore, like *Virus* it first appeared on the Archimedes, and now here it is on the ST, Amiga and PC.

At one level *Conqueror* is a simple arcade game that puts you at the controls of a tank with the computer sending wave after wave of increasingly more powerful tanks against you. There is not a great deal to this level, although it certainly benefits from a landscape of gently undulating hills and dales, scattered with the occassional copse and stream.

Follow a road in this idyllic pastoral and you eventually come to a village, complete with church. This is very reminiscent of *Virus*, although the game lacks some of Braben's humorous touches.

At another level *Conqueror* can be played as a strategy game, where you control the movements of up to 16 other tanks (depending on your earlier scores) chosen from four different types, each with its own character.

Though *Conqueror* is not as complex as the rather more expensive *M1 Tank Platoon* from Microprose, for me it is a rather more successful game than *Virus* if only because it is easier to control. *Conqueror* does need at the very least a 12MHz AT with EGA display.

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NEW STE PROGRAMS APPEAR

The STE's wretched publicity concerning its inability to run many ST games and serious software has finally begun to give way to better news. For programs that take advantage of the STE's enhanced sound and graphics abilities are beginning to appear.

First out of the starting blocks are *Titan* and *Future Wars*, both written by programmers in France – which is where, I am led to believe, the STE made its first appearance on store shelves. (The story is that this happened after a fire in a warehouse: whether this rumour is true or not I have no way of knowing.)

The first English game to recognise the potential of the STE is the tabloid pastiche *Rockstar Ate My Hamster*, Colin Jones' music industry simulator, published by Codemasters. *Rockstar* offers an STE option at the beginning of the game that enables unfortunates unlucky enough to have plumped for the ST upgrade to console themselves with enhanced sound.

But perhaps pride of place should go to Microdeal, which has been commendably prompt in releasing *Canvas*, an art package that takes full advantage of the STE's larger palette and 64 onscreen colour potential. I've got to give full marks for this one.

Incidentally, on the subject of the STE, Atari has quietly released a patch that gets past one of the new machine's more ludicrous shortcomings. Believe it or not, you're unable to boot up in medium resolution – or were, until this software patch was released into the Public Domain.

The patch, it need not be stressed, is in no way an admission by Atari that it may, possibly, in any way, shape or form have cocked things up on a grand scale. As if they would!

DIGITA MAKES GREEN STAND

ST software producer Digita International may not be the first and only software company to proclaim allegiance to the green movement, and it surely won't be the last.

However, it has just gone to the trouble of issuing a press release proclaiming that every one of its products – including packaging, manuals and brochures – is produced on environment-friendly paper, free from chlorine and using straw fibre. Director Jeremy Rihll bravely describes the extra cost as 'a small sacrifice' and urges other manufacturers to consider making the same effort. Hear, hear.

DIARY NOTES

ST muso types take note (geddit): the MIDI Music Show takes place on April 7 and 8 at Hammersmith's Novotel, where, by the way, they do an excellent three-course breakfast.

More than 60 companies will be exhibiting state of the art technology ranging from keyboards to software. There will also be seminars, demonstrations and conferences on a wide variety of subjects, such as sampling, creative editing and sequencing.

For further information contact Timothy Collins for organisers Westminster Exhibitions on 01-549 3444.

IF AT FIRST...

As the old computer saying goes, if at first you don't succeed, cheat like hell:

• *Predator*: press F10 to boost energy and score. "You probably know this," writes 14-year old Worthing inmate Richard Penfold, "but if you don't there it is." Well, quite.

• *Afterburner*: Sutton's very own Barry Egan has a rather nice one for this. Pause and type AGES. The game restarts and you can skip levels by pressing < and >. Oh yes, and you also get a little 'hooray' too.

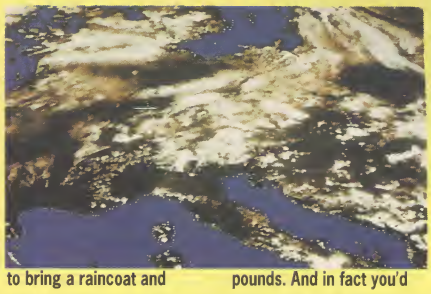
• *Return to Genesis*: hold down F5 and type in WASP.ASM. (Yes, this comes from Barry Egan)

OPPORTUNITY KNOCKS

Britain's brightest and best ST magazine, *ST Format*, is looking for a writer, offering an excellent opportunity to break into the highly-competitive world of magazine publishing, working on a fast-growing magazine that currently sells more than 40,000 copies each month. If you are interested, then please watch for the advertisement in the recruitment section of this magazine.

Steve Carey

ST FOR MICHAEL FISH



ICS Electronics has announced a new low-cost, ST-based geostationary satellite receiving system. This roughly translates as a device that enables the user to pick up live weather pictures of startling quality from the European Meteostat 4 satellite – situated over the equator and the Greenwich Meridian.

So, now you can have to hand detailed and beautifully coloured pictures of the cloud cover that lingers above Europe, and you can have it updated every half hour – the very pictures you see on TV weather forecasts!

Indeed this means that you are now clean out of excuses. There is no longer any reason for mistaking weather conditions for long weekend jaunts to the continent. You will know from now until forever when to bring a raincoat and when to take along an extra pair of shorts.

The system comprises a receiver and pre-amplifier, a three metre antenna (try fitting that without the neighbours complaining) and ST software. Plug the stuff into your ST and away you go. I've seen some results, and the quality is quite superb. It's just a pity I can't afford the expense at the moment.

You may expect this kind of machinery to cost several hundreds of pounds. And in fact you'd be dead right: it does. The whole kit and caboodle comes in at an eye-watering £600 plus VAT.

MET-2 does have a wide variety of applications. Besides the obvious educational potential, it will also come in very handy should you just happen to run a small airport or a television station.

Indeed, if you have £600 to spare, and you don't want to contribute to the Needy Hacks Fund contact ICS on 0903 731101.

AUSTERLITZ

AMIGA GAME of the WEEK

MIRRORSOFT • £24.95

After a head start on the Amiga, Turcan's latest wargame, *Austerlitz*, has now made it onto the ST.

For those of you who do not know, Turcan is hailed as the wargame king, having produced simulations of the great battles at Borodino and Waterloo.

Indeed, *Austerlitz* isn't like many wargames that present you with a two-dimensional map littered with troops. Instead you see the battlefield exactly as your leader would have seen it, and thus you face the same problems that a field general would have faced.

One of the grandest of these adversities is that you are remote from the action – and, as a result, you must dispatch riders to find out what's happening and to carry orders to troops. But, echoing the element of danger in the myth of Telmachus, riders may be killed and orders may never reach their target.

The real battle of Austerlitz was fought between Napoleon and the allied forces in Czechoslovakia, and considerable, painstaking research has gone into making certain the game obeys the historical element as closely as can be imagined.

Indeed, *Austerlitz* is played as a series of turns, during which you have 15 minutes of simulated play to issue a maximum of eight orders. And the orders must be precisely and logically constructed. For example, "Keinmayer transfer your cavalry to Langeron", is an intelligible instruction to one of your captains. When you've finished your turn, the computer opponent makes the next move.

Adding yet another element of realism to *Austerlitz* is the delivery of post, which arrives at intervals and informs you how the troops are moving around the battlefield and how the attacks you ordered have fared. In fact, the manual goes so far as to state that the only detail of genuine battle not taken into account in *Austerlitz* is the effect of wind on cannon balls.

It's true – you're in for a long fight in *Austerlitz*. You can play with the original historical orders in which case your battle will run along the same lines as the real event. In this way, you can see whether your own strategic skills would have achieved a different result. Alternatively, you can change these orders at the start of a game to make the battle run along altogether different lines.

If you're a wargame fanatic or just looking to play wargames on a more realistic level, you can't beat any of Turcan's games. Austerlitz might not be as well known as the battles at Borodino and Waterloo, but the namesake game is much more fun to play than Turcan's previous efforts since it mirrors Napoleon's greatest strategic victory.

In the final analysis then, there's no beating *Austerlitz* for an electrifyingly-addictive wargame. The strategy element is a winner.

PLAYING TIP

Want to smash your way past the dross from the local cemetary in *Ghouls 'n' Ghosts*? Or how about bashing your way through the alien creeps in *Cybernoid*? Here's how, courtesy of *ST Format* reader, Nathan Powell from Kent.

GHOULS 'n' GHOSTS

In *Ghouls 'n' Ghosts* wait for the game to load, press FIRE to start and then type in the words STEPHEN BROADHURST. You're now invincible from the aliens but you can still be killed by the rising platform so be careful.

CYBERNOIDS

To cheat in *Cybernoid*, press SPACE when you're on the title screen and type in RAISTLIN. Now press SPACE again and you'll have infinite lives. To advance to the next level, pause the game and press N.

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CITIZEN	180E	150/30	118
PANASONIC	KXP 1081	144/28	122
PANASONIC	KXP 1180	192/36	139
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MAN. TALLY	MT-905	6PPM	870*
MAN. TALLY	MT-910	10PPM DUAL BIN	2054*
PANASONIC	KXP 4450	11PPM	1283*
EPSON	GQ 5000	6PPM	1059*
CANON	BJ-130	INK JET	532
H. PACKARD	DESKJET+	INK JET	572*
MAN. TALLY	MT-91	INK JET	529
OLIVETTI	TH-760	THERMAL	525*

(equivalent to IBM QUIETWRITER)

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(equivalent to IBM QUIETWRITER)
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PC 1512	DD	442	517	–
PC 1640	SD	463	541	623
PC 1640	DD	518	598	683
PC 1640	HD30	682	767	857

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ALL MODELS INCLUDE 1 YEAR ON-SITE MAINTENANCE

8088; 4.77/7.16/9.54mhz; 640K ram; 3 slots; enhanced keyboard. Includes: serial/parallel ports; clock; 1 or 2 360K drives; hard disk controller; MS-DOS 3.21, GW basic & manuals.

		MONO £	EGA £
PC 10	SD	476	745
PC 10	DD	526	790
PC 20	HD20	677	943

(As PC 10 SD but includes hard disk drive)

SAMSUNG (monitor not included)

ALL MODELS INCLUDE 1 YEAR ON-SITE MAINTENANCE

80286; 8/12mhz; 1mb ram (exp. to 5mb); 5 slots; enhanced keyboard. Includes: serial/parallel ports; clock; 1 x 1.2mb & 1 x 1.44mb drives; hard disk controller; MS-DOS 3.3, GW basic & manuals.

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SPC 6512/2	DD	HD20	1306

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SUPER 16TE	HD30	583	651

* SPECIAL INTRODUCTORY OFFER ON SUPER 16TE SD MONO ONLY . . . INCLUDES 12" MONO MONITOR £378

HYUNDAI PC XT WITH MONO MONITOR
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80286; 8/12mhz; 640K ram; 6 slots; enhanced keyboard. Includes: serial/parallel ports; clock; 1 or 2 1.44mb drives; MS-DOS 3.3, GW BASIC & manuals.

		EGA £	VGA £
286x	SD	738	762
286x	HD30	972	1083

AKHTER (monitor not included)

8088; 4.77/7.15/9.54mhz; 640K ram; 1 slot; 84 key compact keyboard. Includes: serial/parallel ports; clock; 1 or 2 720K drives; MS-DOS 4.1, GW BASIC & manuals.

MINI-PC		MONO £	VGA £
MINI-PC	SD	441	554
MINI-PC	HD20	479	593

80286; 8/12mhz; 1mb ram (exp. to 8mb); 7 slots; enhanced keyboard. Includes: 2 serial/2 parallel ports; clock; 1 x 1.2mb drives; hard disk controller; MOUSE, WINDOWS, MS-DOS 4.01, GW BASIC & manuals.

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MONO	PHILIPS	BM 7913 FST	12"	80
MONO	PHILIPS	BM 7713 FST	14"	96
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MONO	SAMSUNG	MA 4671/3/5 FST	14"	88
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MONO VGA	AKHTER	VGA 14M FST	14" P/WHITE	99
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EGA	PHILIPS	CM 9073	14"	317
EGA	SAMSUNG	CM 4551	14"	281
VGA	HYUNDAI	HDM 401 FST	14"	253
VGA	PHILIPS	3CM 9809	14"	372
VGA	SAMSUNG	CJ 4581	14"	281
VGA	AKHTER	VGA 14	14"	273
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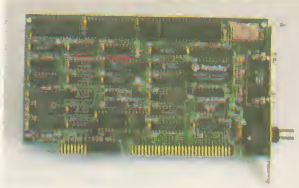

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MDM 2400 PC CARD MODEM
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AMIGA

CYGNUS ED UPGRADE

Cygnus Ed Professional, made by ASDG and arguably the most powerful text editor on the Amiga, is to to be upgraded to *Cygnus Ed Professional*, release 2.

The new release features unlimited undo/redo and a turbo search and replace mode that is one hundred times faster than that used in the first program, which is, in and of itself, very fast.

Other enhancements include faster and more powerful macros, expanded A-Rexx support, alternate screen fonts for enhanced readability on high resolution screen displays, and a unique programming language support feature that claims to help Modula-2 programmers quickly find and correct syntax errors.

Cygnus Ed Professional 2 also features a powerful file requester library that can be freely used by other developers, hopefully allowing for a greater standardisation of common functions in Amiga personal computing.

When *Cygnus Ed Professional 2* is released in this country, expect the price to be approximately £100. Contact the Amiga Centre Scotland on 031-557-4242 for more info.

TV TIMES

Zuma Group has announced the release of two major upgrades to the popular video products *TV*Text* and *TV*Show*.

*TV*Text Professional* is a powerful video presentations package that offers professional standard video titling tools to give your offerings that creative edge. As well as the standard outlines, shadows and strobes that can be applied to any onscreen fonts, *TV*Text Professional* adds metallic look, colour animated glows, glints, sheens and cycle effects, to its already impressive list of title effects.

In addition, *TV*Show II* is a sophisticated slideshow program that can be used to present any Amiga graphics (including HAM and EHB). Using a mouse and menu driven script editor, it is easy to create complex presentations of any combination of IFF screens, ANIM format animations, computer-generated speech (using the Amiga's built-in speech synthesiser) and IFF 8SVX sound samples.

What is more, to add that professional look to your desktop video, *TV*Show II* includes 40 variable speed transition effects. Both programs are now available from HB Marketing, who can be contacted on 0895 444433.

AMI-EXPO

It's official! Ami-Expo, the premier exhibition for the Amiga, is to come to England in September of this year. The shows, which have previously been held outside of the USA only once, are viewed by many top developers within the Amiga industry as the venue at which to be seen. Previous shows have attracted big names such as NewTek and ASDG.

According to a spokesperson for Ami-Show, the organisers, the UK is seen as a most important market for the Amiga and therefore it was only a matter of time before the show made it over.

Indeed, Ami-Show is very strict on the question of who is allowed to exhibit, which has done wonders for retaining valuable floor space for those who are most deserving.

It seems almost certain that many US developers will fly across the Atlantic to exhibit at the London Expo. When I last spoke to NewTek's Mark Randal (Director of Marketing at NewTek) he assured me that his company would more than likely be exhibiting.

Incidentally, there is an exhibition date before the London fixture. In fact, the next Ami-Expo, which is to be held in Washington DC, will highlight the Amiga's increasing role within the multi-media industry. The event will include a wide range of exhibits, demonstrations, seminars and classes, all designed to showcase the unique features of our much loved machine.

So, if past events are anything to go by, then you can expect both the Washington Expo and the London Expo to be worth seeing.

I can assure you now, anyone who wishes to be taken seriously within the Amiga industry will be attending one, and most likely both, of the Expos. (I, for example, will be propping up the bar, as per usual).

Jason Holborn

MUSICAL YOUTH

Where would we be without *Music-X*? Since its release last year, that single program has done more to promote the Amiga as a professional tool for the modern recording studio than any other Amiga product.

Even the likes of *Dr T*, *Passport Designs* and *Steinberg* have failed to achieve what *Music-X* has done with ease. Call it a result of hype, or simply a good program earning the recognition that it deserves – either way, *Music-X* has put the Amiga on the music industry map.

However, as I'm sure many of you are aware, *Music-X* is a rather expensive program. Coming in at just under £225, it is out of reach for most home users, who no doubt find it difficult to justify paying such a price for a single software item.

It will, therefore, be music to your ears to hear that *Music-X Junior* has brought some relief in the expense department. Indeed, considering the very reasonable price tag (under £100), it represents the best sequencer system that your money can buy. It's definitely worth a look.

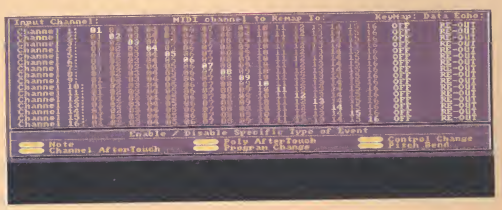
Upon loading, *Music-X Junior* appears virtually identical to its big brother. The main sequencer screen (which still offers a full 250 tracks of realtime recording) actually is the same as *Music-X*, apart from the removal of some recording and syncronising options (SMPTE support has been chopped altogether). Branching off from the sequencer page is the sequencer bar editor, which is now the only sequence editor with the removal of the *Music-X* event editor.

Music-X Junior also has an altered filters page, which acts as a software controlled MIDI patchbay. The original *Music-X* filters page allowed the filtering of individual MIDI events to different channels, but the *Music-X Junior* is a considerably less powerful beast, behaving more like a glorified channeliser than a sophisticated event filter.

Surprisingly, the unique *Music-X* keymap editor has survived virtually intact. Apart from a few minor changes, the keymap editor still contains all the important elements that made it an incredibly useful extra of the original program.

Additionally, for those of you without racks of MIDI gear, the *Music-X* Amiga samples page has survived the chop, to allow the Amiga to not only control, but to join in on the music making.

Those of you hoping to take advantage of the cheap *Music-X* patch editors, however, will be somewhat disappointed to learn that the entire *Music-X* librarian page has been removed. Users of *Music-X Junior* will, therefore, have to purchase stand-alone third party patch editors to complement the new *Music-X Junior*.



• The major differences between Music-X and Music-X Junior can be found within the filters page, which has been totally redesigned

KNIGHTS OF THE CHRYSTALLION

ST GAME of the WEEK

US Gold • £29.99

Not many games make use of the Amiga's HAM mode – in fact, I can only think of two – and somehow those that do seem to have a very starnge storyline. *Knights of the Crystallion* is no exception, being one of the strangest games I've seen in a long time.

The game takes place in Orodrid – a city made from the bones of a long dead beast. You play the part of a psychic member of the Adreni family, and you must hone your skills to the utmost level of mental prowess.

If you can beat the caves of the Tsimit, master the game of Bosu and find the secret of the Deketa cards, then you can enter the fourth veil and ride your own Crystallion.

Sound confusing? Well don't worry! It all becomes clear after a few goes!

Even those with a minimal interest in role-playing games should find themselves deeply engrossed in this superb atmospheric adventure.

The graphics and sound of the Amiga lend credence to the believability of the machine-produced realm, so much so that you will be using the game's strange language without thinking after a short while!

In the final analysis then, if you're a fan of the ethereal and are fed up with blasting aliens, then try *Knights of the Crystalion* – it may be just the alternative you're looking for.

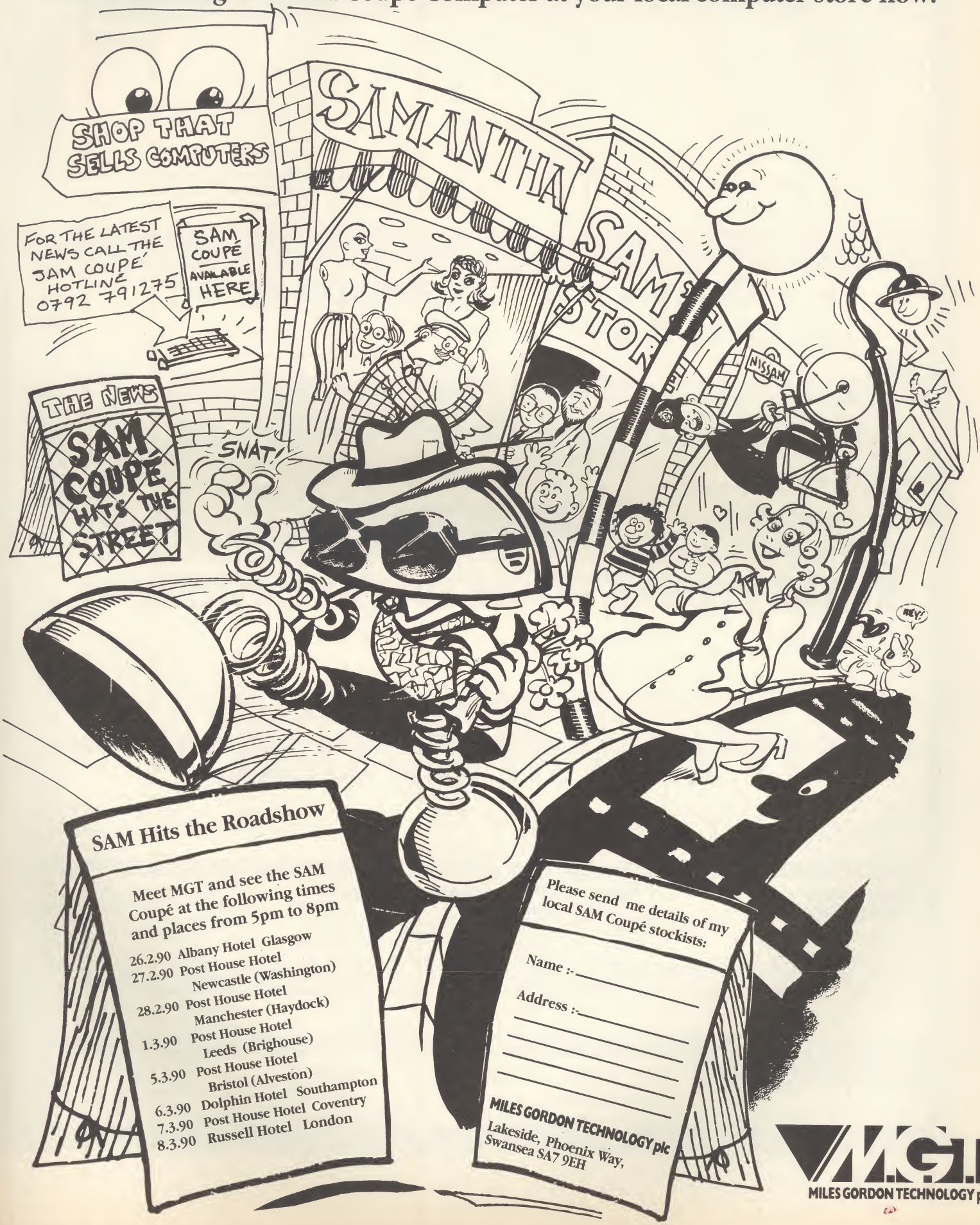
PLAYING TIP

INDIANA JONES AND THE LAST CRUSADE

Having trouble getting the Holy Grail? Then enter JEHOVA on the title screen to activate the cheat mode. Now you can press L to skip levels and press 1 and 2 to move around within the level. Our warmest thanks to Neil Pollard, Brierfield, Lancs

SAM hits the Street!

See the exciting new SAM Coupé Computer at your local computer store now!



SAM Hits the Roadshow

Meet MGT and see the SAM Coupé at the following times and places from 5pm to 8pm

26.2.90 Albany Hotel Glasgow
27.2.90 Post House Hotel Newcastle (Washington)
28.2.90 Post House Hotel Manchester (Haydock)
1.3.90 Post House Hotel Leeds (Brighouse)
5.3.90 Post House Hotel Bristol (Alveston)
6.3.90 Dolphin Hotel Southampton
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SPECTRUM

A LITTLE BUSINESS

If you're of the opinion that budget shoot-'em-ups should have slow, uninvolving gameplay, be based around a clichéd sci-fi plot populated with races of improbably-named aliens and feature the kind of weedy graphics that give the Spectrum a bad name, you'll love *MegaNova* from Alternative. Personally, I didn't like it much.

You can probably remember reading and getting rather excited about a forthcoming Speccy music creation program called *Music Writer*, which was mentioned in the *Express* news pages a few issues back. Unfortunately, the phone number given was the author's home number which he'd rather you didn't ring for more information on his utility. Instead send an SAE to G. Rowland, P.O. Box 49, Dagenham RM9 5NY and you'll receive a plush leaflet that will let you know all the necessary dirt.

Music Writer, by the way, looks very interesting and it's gratifying to see non-games software of such an apparently high standard still being written for the Speccy. I'll let you know if the program lives up to expectations when it's released in March.

MORE USERS

It's always heart and cockle warming to hear about the setting up of a new user group. Surely if there's any true gauge of popular user support for a machine it is these collectives of like-minded and generous-hearted enthusiasts?

Plus 3D is the name of user club for Plus 3 owners that's got heaps, well, a heap anyway, of PD on offer to its members, among lots of other desirable things. The group was first mentioned in this column aeons ago, but, unfortunately, it promptly vanished, and with lots of your SAEs as well.

Despite what you might have thought, the founding father, Lee Davis didn't steam the stamps off said SAEs and do a bunk to Peru, but the response was so great he did have to get a couple of chums to help him run such a time-consuming venture.

So Plus 3D has risen like one of these mythological birds beginning with P that I forget the name of, under the new guiding hand of Gary Stimson.

Gary tells me that anyone who originally enquired about the group all those centuries ago should be receiving full details of the revamped service soon – but for those who didn't respond Plus 3D promises its members quite a lot for very little.

The reasonable sum of £2.50 a year gets you six issues of the club newsletter, which I haven't seen yet, the chance to establish communication with other Speccy-owning life forms, a free technichal helpline and access to a rather well-stocked PD library. The latter looks particularly encouraging with no less than 36 pieces of software already on its ample shelves.

If you want to sign up send a postal order, stamps or securely-taped cash for the above amount to Gary Stimson, 4 Fox Covert Drive, Roade, Northants NN7 2LL. If you just want more details, the usual SAE will suffice.

BARGAINS!

Just a small reminder folks about the once-only, never-to-be-repeated opportunity of a lifetime that I mentioned to you, and only you, a few weeks ago. If you want a copy of *Chordata*, the public domain guitar chord finding program written and kindly donated by top muso Dave Rogers, simply send me a blank tape and a suitably well endowed – postage-wise – Jiffy bag to get it back to you. Rush your order to Robin Alway, *New Computer Express*, 30 Monmouth St, Bath BA1 2AP. And while you're at it why not share a PD creation of your very own with me?

Robin Alway

JUST POKIN' ALONG

Here are some more seemingly-insignificant numbers that, when inserted into the appropriate game with a Multiface (or similar device), can save lives, stop time and keep stress levels healthily low.

GAME	POKE	EFFECT
ATF	35717,0	
	35718,0	No weight limit
	32815,n	n=Number of lives
	32990,0	Infinite lives
Bedlam	58691,0	
	59430,0	
	59783,0	Infinite lives
	30037,0	Stop balls
Fox Fights Back	48071,0	Infinite lives
Star Glider	37797,0	
	37798,0	
	37799,0	Infinite lives
Star Wars	45268,0	Invincible
Trantor	56596,0	Infinite strength
	56711,0	Infinite time
	54236,0	Infinite ammo
	52221,0	Infinite lives
	52529,0	Infinite energy

This weeks' quota of fawning gratefulness goes to the man responsible for all the above, Ashley Price.

PCW

BUZZ WORDS

In BASIC substitute a discreet blip for the 'bell' sound, `CHR$(7)`. Include the following in your program and when you want a quiet buzz, give the line `CALL buzz(a%,b%)` as in line 1000. Adjust the values of a% and b% to change lengths and pitches of blip.

```
10 MEMORY &HCB00-1
20 address=&HCB00 : ln=120
30 FOR i=1 TO 12
40 sum=0: READ code$,check$
50 FOR j=1 TO 21 STEP 2
60 byte=VAL("&H"+MID$(code$,j,2))
70 POKE address,byte
80 sum=sum+byte: address=address+1
90 NEXT
100 ln=ln+10
105 IF sum<>VAL("&H"+check$) THEN PRINT
    "Error: check line"; ln : END
110 NEXT
120 buzz=&HCB00
130 DATA e5d5c5dde54e2346eb5e23,664
140 DATA 566960cd1bcb3e0cd3f8dd,5c4
150 DATA e1c1d1e1c9f37dcb3dcb3d,79d
160 DATA 2fe6034f0600dd2130cbdd,443
170 DATA 093e0b000000040c0d20fd,18c
180 DATA 0e3f0520f83cfe0d20023d,310
190 DATA 3dd3f8444ffe0b20097ab3,4fa
200 DATA 2809794d1bdde94d0cdde9,4f7
210 DATA fbc90d0a43423432206d6f,3c2
220 DATA 64756c610943423533206c,328
230 DATA 703209434235372065786 9,302
240 DATA 74091ac974091a00000000,1f7
250 a%=2000:b%=10
1000 CALL buzz(a%,b%)
```

RIDICULOUS IRRELEVANCE

According to the February issue of PCW magazine *8000 Plus*, the Soviet reformer Boris Yeltsin is writing his autobiography on a PCW. His name 'corrected' by *LocoScript* is Bores Yetis.

A HIT WITH A MYTH

Just a word recommending Magnetic Scrolls' *Myth*. The game is not available in the shops, and only given to members of the adventure society, the Official Secrets Club.

The game is, however, a good example of the adventure genre which invites you, as Poseidon, to capture the Helmet of Invisibility from Hades. If you enjoy puzzles and adventuring, give John Trevillian a ring on 0279 726585 for details.

DATE TO MISS

Oddest release of 1990 so far is *Pocket Datadate* from A4 ideas on 0249 815082. It's a list of anniversaries, birthdays and other important notables, supplied as a number of *LocoScript* files that print out at personal-organiser size .

Useful, maybe, for some people, and interesting, perhaps, for others, but a similar book would cost you a couple of pounds, be easier to use, and could be utilized to prop up your desk.

SPACE SAVER

Another strange but true fact about *LocoScript*. In a menu which uses the [+] and [-] set keys to set something by putting a tick next to it, you can use the space bar instead to 'toggle' the option – i.e. cycle through the selected items.

Rob Ainsley

MSX

ADVENTURING

I've been adventuring this week, and although I am not an adventure freak, two new titles have given me a pleasureable, if also frustrating, time.

The first title I tried is from a company referred to as K-Soft. Called *Silent Frontier*, it is a text-only adventure game. Now I know that some consider the text only adventure to be old hat, but there will be just as many who grumble that graphics in most adventures are inadequate as well.

If the opening sections of *Silent Frontier* are anything to go by, graphics would, indeed, be superfluous to this game. On the other hand, the puzzles you have to solve are at the same time complex and intriguing.

While the game accepts mandatory but somewhat ineffectual commands such as north, south, east, west for movement, and while it also understands many two word statements such as 'open door' or 'search hold', there is also a save game feature so that you can restart from your last position. This last feature is indispensible, as I don't think that anyone will complete the game at one sitting.

As it says in the supplied literature, *Silent Frontier* took 10 months to write, and it has a wide vocabulary. I find this latter assertion easy to believe as the game seems quite polished. Indeed, the game is as good as some adventures that are twice the price.

What's the adventure all about, I hear you all cry. Sorry, I'm only going to tell you is that Silent Frontier is a spaceship, and you have to search it and find the ship's log. The rest you can discover when you play the game.

Silent Frontier is priced at £5.95 inclusive, and can only be purchased by mail order from K-Soft Computers, 1 Stanley Street, Ratford, Notts. For the price asked, this game is pretty good value.

TALKING SECONDS

The second adventure is an MSX 2 game called *Riddler*. Supplied on 3.5-inch disk, it is from a company called Micro-Creations, and as a first attempt at producing software for the MSX, it, like *Silent Frontier*, is only available by mail order.

To say *Riddler* differs from the previous adventure would be an understatement. Firstly, this title contains quite a few digitised pictures. Secondly, the game only accepts certain inputs, eg letter 'l' to look and 't' to talk. It also accepts N, S, E and W prompts.

Riddler is a game set in a world of magic, and you play the role of the Bard. You have to seek out the Riddles and destroy the Riddler after doing so.

Riddler, priced at £12.99+ 50p+ p&p, is available from Micro-Creations, 35 Avison Rd, Cowersley, Huddersfield HD4 5TL. If you haven't seen digitised pictures on your MSX before, I recommend that you buy *Riddler*, and find out what you've been missing!

WATCH THIS SPACE

Grandslam continues to produce MSX games, and the latest release, *Space Harrier II*, should prove a best seller. As they say, watch this space.

Keith Neal

CPC

KICK OFF IS HERE!

Still breathless from his first-round fixture against Waring Academicals (feeble no-hopers from *Express*'s sister mag *Amstrad Action*) your worthy columnist has the latest news on Anco's CPC version of *Kick Off*, which retails for £9.95 tape, £14.95 disk.

And what a version it is too! Mind you, first impressions aren't that inspiring. The graphics look like a Spectrum on a bad day (yes, that bad), and the sound is equally grim.

But then the original 16-bit versions aimed to score on gameplay rather than glitz, and you'll be pleased to learn that the CPC outing is just the same. If you can ignore the flickery sprites and players which look more like three-legged beetles, you'll soon find out that Anco's little gem is as addictive as ever.

The specs speak for themselves:

- Multi-directional scrolling
- Practice modes for ball-control
- Five skill levels
- Choice of four team formations
- League competitions for 8 players
- Nine types of corner kick
- Yellow and red cards
- Best of all: sheer ball control.

Control is either via joystick or keyboard – though you'd need some pretty good co-ordination to get anywhere playing with the keys. In the heat of the action, trying to get four fingers and a thumb working in unison is a recipe for half a dozen dislocations and a trip down to Casualty to un-knot your digits.

Of action there is plenty. The player currently under control is highlighted with a horizontal bar, but even experienced *Kick Off*-ers (Kickers Off?) will still need to keep their eyes peeled, as one kick can send the ball half way down the pitch in as many seconds as it takes to stamp like Rumpelstiltskin.

It's all furious stuff, and tempers can run high as players are fouled, corners missed and penalties bungled. Don't play this one with your best friend, because you won't be the best of friends much longer...

• **Kick Off: *on the CPC!***

FIENDISH PLOT

Fiendish Freddy is a very nasty piece of work. Although he's dressed as a clown, his intentions are extremely unfunny. Indeed, he's been sent by highly unpleasant scumbags (only quoting from the instructions, folks) to sabotage your ever-so-nice little circus.

Basically, unless you can raise some $10,000 to pay off this anonymous scallywag, your circus will be no more. And the only way you can raise the necessary sum is by executing perfectly each of the six specialty acts in that night's performance.

Tough enough, you might think, but it's made even more difficult by Fiendish Freddy himself, who tries to sabotage your every move.

The game, from Mindscape, is separated into six events, each corresponding with a traditional Big Top crowd-puller.

High Diving is the first event, whereby you must guide your intrepid diver (Horace) from his ladder into a tiny receptacle of water. All the way down, Fiendish Freddy tries to push him away from his target...

Next comes juggling, where our hero Jeffy Joe must try to juggle as many items as possible while riding a unicycle. If he drops five items before the time's up... well, it looks like tonight's performance will be the last. Fiendish Freddy sticks his oar in here, too, by lobbing bombs and – believe it or not – babies at our unsuspecting unicyclist.

Next is the trapeze act. You have to control the fulsome Finola of the Flying Fuller Family as she swings and somersaults through the air. Freddy, meanwhile, has plans of his own, as he dons a jet-pack and arms himself with a pair of scissors...

The fourth event has you tightrope-walking as Tony Tiptoe (it gets worse). Our fiendish felon flies about trying to knock Tony off, shoots him with a cannon, and even hurls circular-saw blades at the poor fellow.

Next you tackle knife-throwing. You have to chuck a barrage of blades at defenceless Knancy Knife (groan), while Fiendish Freddy hurls smoke bombs in front of your scantily-clad assistant, which doesn't do much for your accuracy (or Knancy's limb-count).

Finally, it's time for the human cannonball. Your job is to guide Fernando safely to his target. Freddy, meanwhile, is up to his usual tricks – this time with a giant cork that gets shoved into the end of the cannon if you don't buck up!

Fiendish Freddy is put together with wit, the graphics and animation are first-class, and it is – for once – a highly original game.

My only worry is its likely audience. Fiendish Freddy, especially as depicted on the packaging, is really quite frightening and he might seem an unpleasant character for smaller kids, while older ones aren't likely to rush out and buy a circus game.

FOUNDATIONS OF SUCCESS

Foundation Software (0252 543945) publishes the one and only step-time sequencer for the CPC. That alone makes it an essential purchase for the CPC-owning MIDI buff.

Foundation has now upgraded the package, however, following suggestions from its many users. The latest version (v4.15) has a whole host of additional features and facilities.

That's not all. Foundation's boss, Chris Owen, is offering current owners an upgrade not to be missed – i.e. it's absolutely free!

If you already own a copy of the *Multi Track Step Time MIDI Sequencer*, simply send off your master disk together with an SAE to Foundation Software, 1 Brookhouse Road, Cove, Farnborough, Hants GU14 0DP.

Rod Lawton

BBC

PICTURELESS

One of the most glaring deficiencies in 'low end' desktop publishing is that images cannot be displayed or printed easily because no reasonable input device is available. Scanners are not cheap. In fact, the least costly on the market for the BBC is Watford Electronics' Handy BBC scanner.

This £135 scanner sports resolutions up to 200 dots-per-inch (DPI) in monochrome only, although up to 16 grey levels are possible through dithering techniques. I've not commented on it before, because, unlike Oscar Wilde, I do like to see something, and I like to see it before I review it.

Now I have, and my verdict is that it's like the curate's egg – good in parts. Scanning in Mode 0 is simple and quick, and if you don't like one it only takes a moment to correct it. Line artwork scans superbly, giving images ideal for import into DTP packages. Indeed, a number of options such as double width and height can be specified.

There is a bad part, too. Photographs do not scan well enough for reproduction, and the instruction sheet supplied was insufficient. Problems with the power supply arose when plugged into a fully-loaded Master 128. Either the wiring was faulty, or you need disk drives with their own power unit.

In conclusion, the BBC Handy scanner is ideal for people who have their heart set on DTP and have the right hardware to support it – dabblers should keep their money in their pockets.

A LITTLE SOMETHING

Here's something you didn't know about the BBC DFS. The total length of a filename is eight letters plus a '.' The full stop ('.') can be anywhere, eg, V.IEWINGS or VIEW.INGS. Very useful for storing things like pictures, eg ART.SCRNI.

A LITTLE EXPLANATION

For those who were confused by my mention of the Music 5000 system last week, the Music 5000 derives from a system launched as the 500 and both use a ROM and programming language called Ample at the core. The rest are really just add-ons!

Andrew Brown

HOT SEAT

Two recent press releases from Acorn back up my recent claim that education is the hot market.

First, Acorn is going to be showing wares to the higher education market in roadshows around the country. Second, and perhaps of slightly greater interest, is the announcement of an expanded networking conference.

To be held at Keele University from 9-11 July, the conference will focus on particular groups from primary through secondary and tertiary plus other areas such as healthcare. Acorn is actually inviting delegates to submit papers to be presented at the conference, so if you are interested contact Sarah Scott on 0223 245200.

YOUR FORMAT

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QL

BERTRUM'S BASIC GRIPE

In Issue 65, Bertrum Carrot complains about the Arc's requirement for BASIC keywords to be in upper case. Perhaps he ought to ditch his Arc and get a QL.

The QL was the first home micro to have a multi-tasking window version of OS. This makes it, in common with the Arc, 'one of the most complex micros around', according to Bertrum.

Actually, QDOS, the QL's multi-tasking operating system, is quite straightforward, and takes up a relatively small amount of RAM. Some users have six or more programs loaded into their machines as a matter of course.

RAM DISK

If you are thinking of expanding your basic 128K QL buy as big a memory expansion as you can afford, and use it in conjunction with RAM disk software.

With more RAM, Microdrive operations will be speeded up, and RAM disk file access will become very much faster indeed.

You'll need to periodically save the RAM disk contents to Microdrive – but you will find operation of your system will be transformed as compensation.

Miracle can supply its Expand RAM without RAM chips, so you can shop around for the best deal when populating it. DRAMs have halved in price over the last few months: look for bargains.

NO MICROWAVE CARTRIDGES

Ablex, the only source of Microdrive cartridges, has ceased manufacturing. The reason for this appears to be the unavailability of the tape that is required.

Tony Tebby of QJump told me that it won't cause him any problems, as QJump only supplied software on cartridge to about 10 users last year.

A 20 MIPS QL?

I see that Motorola is sampling its new 32-bit super chip, the 68040, rated at 20 MIPS. Like its predecessors, this will have dynamic bus sizing, so it could be used to replace the 68008 in the QL. A better bet, however, would be to use it in a 32-bit QL clone – the performance would be staggering. The 68040 currently costs $759.

LONDON STD CODES

The London area STD codes change in May. If you have a database of phone numbers you could save yourself a lot of work with TF Services' conversion program – £10 inclusive, from TF Services, 12 Bouverie Place, London W2 1RB. Tel: 01-724 9053.

John Torofex

C64

SOMETHING OLD

People might think, with all the waves of hysteria currently floating around the computer world, that piracy of software and viruses affecting computers are both fairly recent phenomena. Not so.

Shortly after I departed from my gainful employment at Commodore Business Machines in 1982 I was attending one of their annual computer bashes in my new role as editor of *Commodore Computing International*. At the show I was approached by a (hopefully former) emplyee of CBM who was offering me a pirated copy of their rightly-famous *International Soccer* cartridge for the Commodore 64 – on disk!

I didn't accept. Then there was the hotel register demonstration program sent out to all official Commodore dealers. Copy it and sell it, thought some – why not? Six months after installation this demonstration program 'came alive' and wiped out all the clients' data as well as doing nasty things to the master disk: viruses had been born.

SOMETHING NEW

Where might you expect to see Johnny Five rubbing shoulders with Nigel Mansell? Gary Lineker standing next to Postman Pat? Paul Gascigne being close to Count Duckula? Answer: they're all involved in top selling games for the Commodore 64, which, furthermore, begs the question 'why aren't companies capable of producing good commercial games software that doesn't depend on a tie-in with a well-known name?'

Answers on a postcard, please, to Hit Squad, Alternative, Ocean, Kixx....

Pete Gerrard

SOMETHING BORROWED

Borrowed from a letter by Stuart Monteith, anyway. For an interesting effect designed for tapes when saving and loading and when saving before you run, try the following listing:

```
10  POKE 252,1
20  READ A: IF A=1 THEN POKE56334,128:
     POKE788,0:POKE 789,192:
     POKE6334,129:GOTO 60
30  POKE 49152+N,A:N=N+1:GOTO 20
40  DATA 165,252,201,1,208,13,169,
     0,141,32,208,133,252,76,49,234
50  DATA 165,252,201,0,208,10,169,
     1,161,32,218,141,33,208,133,
     252,76,49,234,-1
60  POKE 56329,19:POKE 56324,49
```

Try `POKE 252,3` to change the colours and alter the `POKE 56324,49` to make the black and white background stripes go up and down. Anything for a laugh.

XE

MIND YOUR LANGUAGE

The Atari 8-bit has always been touted as a real programmer's machine. An operating system that is copied from ROM into RAM on boot-up enables you to do all kinds of wonderful things.

You could even re-write the entire operating system if you wanted to! There is a fly in the ointment – didn't you just know it? The Atari 8-bit has never been fully supported by powerful languages.

Sure Atari BASIC is good as a starting point, but once you've programmed with it for a few months, you'll soon want to move on. What is there you might ask?

Pascal and C have both been denied to 8-bitters (versions have appeared, but have then disappeared almost as quickly) and although there are machine language assemblers, not everyone wants to spend a large proportion of their time trying to learn its intricacies.

PUBLIC DOMAIN

Turbo BASIC is a BASIC language with which you can compile all programs easily so that they run at machine code speed, and it's compatible with existing Atari BASIC programs, so you can compile those too..

Best of all, Turbo BASIC costs only £3 as it is in the public domain. And unlike most PD programs, Turbo BASIC comes with a paper-based manual and examples. So, where can you get this wonderful language? Contact Page 6 PD Accesory Shop at PO Box 54, Stafford ST16 1DR. Tel:0785 213928.

Edmund Blake

ARCHIMEDES

SPEED UNDREAMT OF

Fact is rarely far behind fiction in this industry. In issue 58 I mused that a 40MHz ARM chip would run faster than the latest Sparc RISC chip launched in December 1989.

Now Dave Vint, a man with interesting contacts at VLSI (the company which manufactures ARM chips) confirms that a 48MHz version of the ARM 3 chip is under development for the Autumn, with a preliminary 30MHz version already in this country.

These higher speeds are made possible by the use of 1 micron technology. This means the space between the tracks on the chip itself – something like a miniscule version of a printed circuit board – is 1 micron wide. The current ARM 2 chip, found in all the Arcs and the R140 Unix machine, is based on 2 micron technology which has to be run more slowly. This is partly due to the physical time it takes to move electrons from one part of a chip to another.

Acorn clocks the ARM 2 chip at 8MHz to allow the use of slow, cheap RAM chips (though you'd never know it through the pricing). With faster 80ns memory, the chip is capable of running at 12MHz, a 50 per cent increase in speed to around 6 MIPS. The chip itself, if you're interested, is VLSI type number VL86C010 – aren't you glad they stuck with ARM?

Six MIPS is nothing to the speeds of the 1 Micron ARM 3, though, which should be able to sustain a rate of 25 MIPS, with peaks as high as 48 MIPS. It's doubtful we'll see an Arc running at this speed for a year or so yet, and costs will probably be high. The 2 micron ARM 3 processor costs over £200 without support chips.

POKING YOUR ARC

The Arc is a games machine after all. It must be – I've had the first game pokes for it. Billy Cassidy has written in with the following wheeze for the stunner *Overload*.

I don't have a copy of the game so I'm sorry, but I haven't tested the poke, and, therefore, cannnot tell you whether it works or not. But, follow the steps to change levels with ease.

1. Before loading, type `*UNPLUG SpriteUtils`
2. [Shift][Break] to run *Overload* and wait for it to crash!
3. Type:

```
1381 IF b%>60 THEN b%=1
1382 IF b%<1 THEN b%=60
1510 IF INKEY-52 THEN b%=b%+1:
 FOR pause=0 to 1000: NEXT pause: GOTO 1380
1520 IF INKEY-56 THEN b%=b%-1:
 FOR pause=0 to 1000: NEXT pause: GOTO 1380
```

4. Type `*RMEINT SpriteUtils` and run the program
5. At the menu, press R to increase your start level and P to decrease it.

At stage 3, you can also try typing `*CHANNELVOICE 1 6 *CHANNELVOICE 2 6 *STEREO 1 -127 *STEREO 2 127 SO.1,-15,5000,1:SO.2,-15,4000,1` for 'a musical surprise'.

Billy also says typing PIGSNOTBIGNO in *Pacmania* produces a little surprise, but neglects to say at what stage you type it. Any suggestions?

MARKETING ADVENTURE

Robico, purveyors of high quality adventures, may have become hard to ignore. Buy any one of the text and graphics adventures on offer for £29.95 – titles include *Stranded!*, *Rise in Crime*, *Fugitive's Quest* and *Enthar Seven* – and if you don't enjoy it you can return it for a £29 refund. This strikes me as a very generous offer, which may introduce new users to the pleasures of the company's programs.

The strengths of Robico's adventures lie in plot and description. Although the latest titles include high resolution graphics, they take up a lot of disk space .

Indeed, the company's offer should tempt a few folks into the Smuggler's cave. Contact Robico on 0443 227354.

Bertrum Carrot

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THE SHOPPING EXPRESS GUIDE TO SOUND

SAMPLERS, SEQUENCERS AND INTERFACES

Computers can be of great help to musicians. As well as making noises from their own loudspeakers, musicians can sample sounds and replay them, or control a synthesiser via a MIDI connection.

The borders between music and software are becoming more blurred with each passing year, as music companies invest in both hard and software companies. The industries are working hand-in-hand to produce an ever wider range of products. Indeed, the choice is baffling and growing larger month by month To some extent, of course, the choice of software and its possibilities are marked out by the computer that you choose to run it on. Now *Express* gives you a comparison of the major computers, followed by a comprehensive run down of the best software available across the board.

COMPUTERS

● ATARI ST SERIES

▲ Built-in MIDI ports
▲ No compatibility problems
▲ Large software base
▲ Not expensive

▼ Some programs require hi-res screen
▼ GEM environment can be slow
▼ Internal sound chip not very good

● COMMODORE AMIGA SERIES

▲ No MIDI compatibility problems
▲ Excellent internal sound chip
▲ Stereo output
▲ Multi tasking

▼ MIDI interface not included
▼ Software base not so large yet

● PC

▲ Large software base

▼ MIDI compatibility problems
▼ Poor internal sound chip
▼ interfaces relatively expensive

● ARCHIMEDES

▲ Excellent internal sound chip
▲ Very fast processor
▲ Multi-tasking
▲ New models have built-in MIDI interface

▼ Small software base

SEQUENCERS

Perhaps the most widely available type of software. MIDI sequencers come in all shapes and sizes from the public domain to the bespoke facilities. The usual mark of excellence is ease of use coupled with hosts of labour-saving musically intelligent routines. Hopefully it will also be able to save in MIDI file format so that work on one sequencer can be transferred to another without tears.

● CREATOR

FOR Atari ST series
FROM C-Lab (Sound Technology): 0462 480000
PRICE £285

Becoming the most used of sequencers it has excellent editing and arranging features. Although not cheap, if you are serious about music then this is the one to go for. Hardware expansion to control up to 64 instruments independently

▲ Excellent facilities
▲ MIDI file compatibility
▲ Will also adapt to video sync
▲ Good editing

▼ Handbook can be difficult
▼ Expensive if you are not serious

● TRACK 24

FOR Atari ST series and Amiga
FROM Comus/Soundbits: 021 733 2063
PRICE £75

Well priced budget sequencer with more features than you would expect, rivaling software twice it's price. Compatible with more up-market sequencers and scoring packages.

▲ Cheap
▲ Good sequencing facilities including Mixdown
▲ MIDI File

▼ Editing is peculiar

● STEINBERG PRO 24

FOR Atari ST series and Amiga
FROM Evenlode: 099 389 8484
PRICE £285

The Steinberg Pro 24 has been the industry standard for many years. The soon-to-be-available Amiga version should prove interesting, if all the rumours are true. They are pushing their new program 'Cubase' at present but one should not neglect this easy to use and very popular program. Make sure you get at least version 3 though.

▲ Easy to use
▲ Established program
▲ Easy editing

▼ Price

● VIRTUOSO

FOR Atari ST series
FROM The Digital Muse: Audio Software: 01 586 3445
PRICE £225

A new all British program having it's first outing this year. Initial reactions are very good and the program has, indeed, many things in its favour. It has all the features that are available on much more expensive packages and, yet, the Virtuoso still remains quite easy and friendly to use.

▲ Very fast - thanks to re-writing of screen management
▲ Very accurate
▲ Can perform disk operations while still running
▲ Many excellent features

▼ New and therefore untested in the general market
▼ Price

● K.C.S. 1.6

FOR Atari ST Amiga, Mac and PC
FROM Dr T: 01 258 3454
PRICE £199

Dr. T programs, are nearly all made to run in a Multi Program Environment, which means that you can work on several of them simultaneously. KCS runs on 48 tracks, has loads of features and is the most popular sequencer from the range. It can also be upgraded with add-on programs to enhance editing features. What is more the KCS can be enhanced as far as music printing goes as well.

▲ KCS is a very well established program
▲ Upgrades and works with other software
▲ MIDI file

▼ Editing not easy

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REPAIRS FOR AMIGA AND ATARI

● M.R.S.

FOR Atari ST, Amiga,
FROM Dr T: 01 258 3454
PRICE £59

The MRS is a low cost eight track sequencer that provides a decent introduction for the beginner. It has a few quirks in its operation, like defining song length from the length of track one. Generally, however, this has quite generous facilities. Indeed, the Amiga version will support the internal voices.

▲ Easy to use
▲ Low cost
▲ Can be upgraded to KCS
▲ Well documented

▼ Has a very laborious editing facility, that slows it down
▼ Has a few peculiarities

● SUPER CONDUCTOR

FOR Atari ST
FROM Microdeal: 0726 68020

This is a very popular little sequencer that will control the ST sound chip. It has been extremely well thought out, especially in the song arrange section. Can also cope with the fine details of MIDI including systems exclusive editing.

▲ Suitable for beginner
▲ Easy arrange section
▲ Well documented
▲ Controls internal sound chip
▲ Good if you want to control MIDI via data

▼ Editing not too easy
▼ Quantize limited

● WADDINGTON SEQUENCER

FOR Atari ST
FROM Public Domain
PRICE about £2

Canadian 64 track sequencer. Although limited in facilities like quantize and editing it is nevertheless a real bargain.

▲ Costs next to nothing
▲ Excellent introduction to MIDI
▲ Easy to use

▼ Limited facilities
▼ Can crash on occasions

● EZ TRACK PLUS

FOR Atari ST
FROM Syndromic Music: 01 444 9126
PRICE £49.95

This is a reasonable sequencer that is fairly easy to use. It is compatible with other Hybrid Arts programs that also boast a multi program environment. Limited on quantizing but not bad for the money. Editing in data only but good for organising songs.

▲ Good price
▲ Easy to use
▲ Compatible with Hybrid Arts EZ Score

▼ Unfortunately, limited on editing and quantizing

● STUDIO 24 MK 1

FOR Archimedes
FROM EMR: 0702 335747
PRICE £99

The cheapest sensible sequencer for the Archimedes. Cuts a few corners here and there but is not a bad sequencer with average editing facilities.

▲ Best for the Archimedes in this price range
▲ Can be upgraded to more powerful Mk2
▲ Very fast

▼ Poor documentation
▼ Editing of data non-graphic

SYNTHESISER VOICING SOFTWARE

One of the great boons of MIDI, especially with the complex multi-timbral synths/tone modules that are on the market. You are able to see the set-up on-screen instead of labouring over a LCD, which allows you to create sounds easily. Additionally, many programs have automatic voice generation to help with creating new sounds.

● CZ ANDROID

FOR Atari ST
FROM Syndromic Music: 01 444 9126
PRICE: £75

The most useful program to get if you have any of the Casio CZ series synths. On their own they are pigs to program and the preset sounds are rancid; use this and your CZ will never sound the same.

▲ Easy to use
▲ Excellent graphics
▲ Good library facilities

▼ Can't really think of any!

● 3D PROGRAMMER

FOR Atari ST
FROM Soundbits: 021 733 2063

This is a smart piece of software that not only covers the Roland D110 but also covers the keyboard versions D10 and D20.

▲ Easy to use
▲ Configures a very difficult instrument

▼ Roland's version of D110 may not work with it (or any other software for that matter!)

● X-ALYSER

FOR Atari ST
FROM C Lab (Sound Technology): 0462 480000
PRICE £175

Very intelligent voicing program for the DX7 synth. It has a built in conversion to MIDI sample dump in order that the sound might be replayed from the sampler directly.

▲ Very easy to use
▲ Good library facilities

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STAR FR10 ★	300/76	£289
STAR FR15 ★	300/56	£379
24 PIN DOT MATRIX		
STAR LC24-10	200/67	£189
STAR LC24-15	200/67	£319
STAR XB24-10 ★	240/80	£375
STAR XB24-15 ★	240/80	£495
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KXP 1595	288/65	£309
24 PIN DOT MATRIX		
KXP 1124	192/63	£220
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LASER PRINTERS		
KXP 4450 ★	11PPM	£1269

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9 PIN DOT MATRIX		
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120D SER	120/25	£119
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180E SER	175/30	£149
MSP15E	160/40	£164
MSP40	240/40	£199
MSP45	240/40	£239
MSP50	300/60	£285
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24 PIN DOT MATRIX		
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LQ400	180/60	£189
LQ550	180/60	£255
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DESK JET +		£519
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LASER PRINTERS		
LASER JET IIP	4PPM	£879
LASER JET II	8PPM	£1248
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OLIVETTI

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DM282S	240/40	£245
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DM250	240/60	£402
DM250L 136 col	240/60	£458
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LASER PRINTERS		
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CANON

MODEL	SPEED	PRICE
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▲ Sample dump
▲ Use of graphics

▼ Price is on the hefty side

● SYNTH LIBRARIES VARIOUS

FOR Amiga, ST
FROM Public Domain
PRICE £2.95 approx.

It is worth noting that there are various public domain programs that will voice the most popular synths; e.g. DX7, CZ series, as a cheap cheerful introduction - they could well be your best bet.

▲ Price
▲ Usually have a set of new voices for your synth
▲ Sometimes have random voice generation

▼ Sometimes fail for no apparent reason
▼ Editing not always available
▼ Editing is nearly always numeric and not easy to understand

SAMPLERS

Samplers is another growth area for computers. In fact, the public domain market is full of samplers of all sorts, from well worn rock numbers to Thunderbirds! However to actually digitise sound you will need hardware and this is where the expense comes in. The main points to remember are that editing needs to be clear and easy, sounds should be able to be filed away to be re-used in other utilities and MIDI support is certainly a must for the serious user.

● FUTURESOUND 500

FOR Amiga
FROM HB Marketing: 0895 444433
PRICE £89.95

Very clean and clear sampling with good editing facilities.

▲ Easy to use
▲ High quality sound

▼ No MIDI
▼ Cost

● A.M.A.S.

FOR Amiga
FROM Microdeal: 0726 68020
PRICE £75

Quality sampling plus MIDI interface.

▲ Clean samples
▲ Comes with MIDI interface
▲ Well organised program

▼ None, unless you think it is too expensive

● PRO SOUND DESIGNER

FOR Amiga
FROM Eidersoft: 0234 273000
PRICE £75

If you get the 'Gold' version, you will get a far superior program. MIDI is included but the interface is extra.

▲ Clean sounding samples
▲ Has many on-screen features

▼ MIDI interface is extra

● I.S. DIGITISER

FOR Atari ST
FROM Innovated Software: 0903 213614
PRICE £69

A sampling package with the options of buying extra software for MIDI and/or clever wave form displays.

▲ Very high sampling rate
▲ Good filters
▲ Program can be expanded

▼ MIDI not in original program
▼ Could be costly

● REPLAY 4

FOR Atari ST
FROM Microdeal: 0726 68020
PRICE £59.95

One of the first sampling packages not in it's fourth version. Earlier versions available on Public Domain as sample players only. MIDI well looked after.

▲ Editing very easy
▲ Samples sound very clean
▲ Tried and tested program

▼ The ST is not the best sample player.

● SAMPLER

FOR Archimedes
FROM EMR: 0702 335747
PRICE £126.50

Has all the funtions for sampling plus the of the computer to make them very clean 8 bit samples.

▲ Fast
▲ Many good features
▲ Very smooth samples

▼ Price

MULTIPLE PURPOSE PROGRAMS

The 'all talking, all singing, and all dancing' section. These are programs that cross over from having just one dedicated function. In the case of Music-X you have a complete music studio under one roof. The rest are mainly for fun (but what's wrong with fun anyway?) although some serious work can be done on them.

● MUSIC-X

FOR Amiga
FROM SDL: 01 309 0300
PRICE £199.95

The best package in the market. It has every feature you could ever conceivably want. MUSIC–X will program synths, organise and store the MIDI data from anything and sequence in a very professional class. This package singlenotedly establishes the Amiga in the music market.

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▼ Sequencer uses all of the traditional notation
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▲ Comprehensive program
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▼ Uses traditional sequence notation

SYNTHESISERS

As mentioned earlier, at the beginning of this piece, the quality of sound does depend on the computer at your disposal. In truth, only the Archimedes and the Amiga are serious contenders for real sound synthesis at present, although Atari is attempting to fix this with the STE. Future computers will doubtless go even further down the road to having a synthesiser tucked under the housing. As a mark of just how far this is going, PC owners can actually now buy synthesizer cards from the likes of Roland. Indeed, it would not be unwarranted to expect a large growth in this field soon, moving away from just replaying sample files towards a more active music synthesis with your computer, and of course, with your ear.

● SOUND GENERATOR

FOR Atari ST
FROM Public Domain
PRICE £2.95 approx.

About the best you can get for the ST's miserly sound chip with on-screen sliders to alter the tone.

▲ Price
▲ East to use and understand

▼ Limited value
▼ Fun only program really

● SONIX

FOR Amiga
FROM HB Marketing: 0895 444433
PRICE £56.48 but often cheaper

Actually lets you draw and/or create your own sounds imitating a real synthesiser. Has other features built in.

▲ Good sound quality
▲ MIDI functions
▲ Can file away sounds

▼ Price

● SOUNDSYNTH

FOR Archimedes
FROM EMR: 0702 335747
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Good all rounder with fast display and waveform drawing facilities.

▲ Sounds can be filed for use in other programs
▲ Very fast and accurate
▲ Good display

▼ Only works on samples sound, not synthesis from scratch

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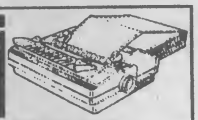

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RUBY Comm software for Amiga. Phone: 0324 38083, with price.

WANTED Bloodwych maps and tips, also dead 3.5-inch computer disks, ie killed by a virus. Tel: 0860 658765 (day) 0506 30194 after 7 pm.

PART wanted: TR5-80 model 3 keyboard, mine's faulty. Must be good condition, will pay up to £15. Contact: Mr Tim Humpherson, Bannau, Stryd-Y-Plas, Nefyn, Gwynedd, LL53 6HP.

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AMIGA modem wanted. Where can I get a good cheap modem from? Contact Nigel, Flat 3, 3 The Fairmile, Henley On Thames, RG9 2JR, with any suggestions.

WANTED for ST k-spread, four or three, also for sale code head, universal selector, £10. Also wanted PC CGA 14-inch monitor. Tel: Ken 061-998 3494.

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AMIGA hardware/software/books wanted. Send details to: Patrick Hogan, 92 Bishopswater, Wexford, Ireland.

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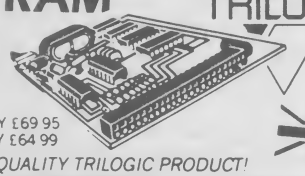

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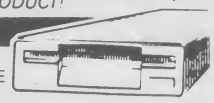

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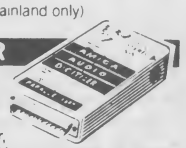

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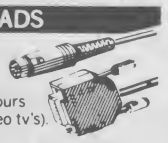

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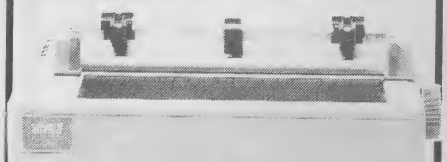

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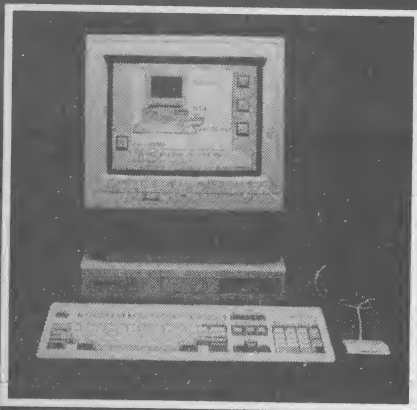

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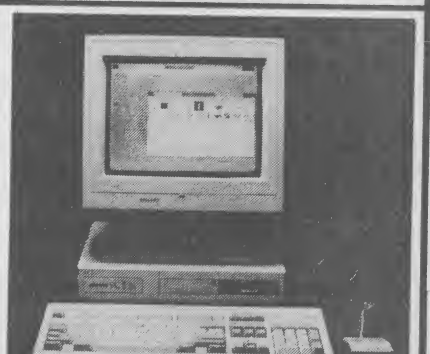

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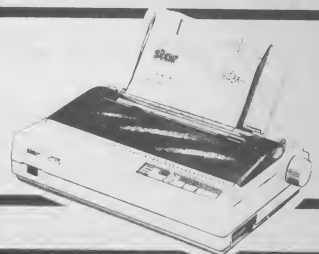

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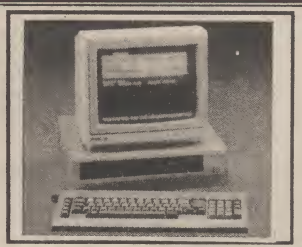

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POWER Basic, Cobol and CPM emulator for Atari ST excellent packages, good as new! A really good bargain at £60. Ring James Mon-Thurs evenings (091) 4601270.

PSION Organiser XPII 32K manual and leather case £65. Other items: data packs, comms etc Please ring 0708 29614 ask for Ted Martin.

AMIGA software Textcraft W/P £15, Photon Paint £10, Skyfox II £8, Two NEC FO1036 3 1/2 disk drives £40 each 01-539-5918.

CP-M - 86 Programmers, uses, graphics manuals, boxes, four at £5 each. Pro-Punter for IBM compatible, 3.5-inch original disk and manual £22. 021-777 8808.

ABILITY PLUS IBM PC software, wordprocessor, database, spreadsheets, latest version. Cost new over £300 still unopened £125 ONO 0704 66485.

AMSTRAD CPC 464, MP2 Modulator, Acoustic Modem, disk drive (CP/M 2.2), 64K memory expansion, 64K Silicon disk all necessary software. £225 0942 606215 after 6pm.

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SINCLAIR QL 128K with 3.5/ 5.25-inch disk interface and over 20 microdrives also loads of QL World Mags. All for £70 buyer please try to collect! Tel Julian Green (0572) 822310.

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AMSTRAD CPC DDI-1 disk drive £60. Rombo with Protext, Maxham, Utopia Roms £50. Firmware manual £15. SAE for details Richard Evans ST. Edmund Hall, Oxford. OX1 4AR.

ATARI STFM, with 1Mb drive, mouse, Euromax professional joystick and over £220 worth of games including Xenon II, Switchblade and Populous etc., only £250 ONO. Phone 01-907 6144 after 7pm.

BARGAINS! Tandy TRS 80 computer £25. Dragon 32 computer £25. Aquarius 'Matel-inch computer £14. All excellent. Also-Atari 65XE computer (Faulty) £10 sell/swap? Details 0743 249094.

WAFADRIVE Spectrum twin drives, serial + Centronics ports, Plugs straight in Spectrums, (imaculate), extra's. Best offers? Spectrum - Interface 1, M/drive, manuals, leads, software £49. (Immaculate) 0743 249094.

TANDY HD IBM compatible computer 256K inbuilt memory with 10Mb hardcard complete with brand new mono monitor and 5.25-inch software, phone Paul after 7pm. (0740) 654136.

C.64,1541, CZN freeze frame, centronics cable, etc, quality software, Geos ultima, pirates, phantasie, sentinel, AMS plus arcades for sale £290 ONO (Southend) (0702) 331560.

ORGINAL Amiga games, Kenny Dalglish Football Manager, Trivial Pursuit, Daily Double £10 each P+P, many others £5 each P+P. Will consider swaps. Phone 0908 320002.

SPECTRUM 128K interface one microdrive many extras £150.00 Spectrum 48K fuller keyboard interface one extras £50.00 Voyager II modem and spectrum interface £50.00 Tel: 0602 731036 after 6.00pm.

CPC software tapes & disks, all originals with instructions games including Batman (movie) Power Drift etc. Also Stop Press & mouse, Adv Art Studio. Vidi Digitiser, Mini Office 2. Tel: 031-665 9897 after 5pm. (David).

FOR sale: 48K Sinclair, ZX Spectrum Plus, cassette recorder, Kempston interface, joystick, 50 original games, Very good condition. £65 ONO tel: (0792) 893456.

BARGAIN: C128, Colour monitor, 1541 drive, 120D printer, Data recorder, cartridges, lots of disks, joystick, mags, mint and boxed, £425 ONO, tel: Tim 0491 613616.

AMIGA A500 BatPack still boxed three months old cost £399 will accept £379 still guaranteed 0908 510284 after 6.30 weekend.

BBC B, 40/80T drive, manuals, software, Watford DFS, Music 5000 synthsizer, Wordwise+ rom, 50 disks, 3 analogue joysticks. £310 or offers. 0442-57406 evenings/weekends.

AMIGA software for sale: Publishers Choice £55. Waterloo £14. Rocket Ranger £10. Bismark £10. Purple Saturn Day £10. Hostages £10. Captain Blood £6. Tel: 01-645 0325.

● OTHER

AMIGA beginners send your address and lists to: 51 Newgate Street, Doddington, Cambs, PE15 0SR. 100 per cent same day reply.

WANTED: Amiga contacts, swap demos etc. Must be fast and reliable. Guaranteed reply for genuine and sincere responses. Write with list to: Jon, 17 Dounehill, Jedburgh, Roxburghshire, TD8 GLJ.

AMIGA owners everywhere, contact me to swap anything!!! Dorian Moore, 3A Union Road, Linlithgow, West Lothian, EH49 7DY.

AMIGA contacts wanted. I can help with Amstrad Sinclair and Commodore spares. Cheap disks wanted, Paul, 231 Caxton Street, Sunnyhill, Derby, DE3 7RB. Ring 0332 760353.

WHEN using Neo-Chrome, how do you load a previously saved picture and how can you get the white square back on the right of the chart? Mick: 0778 422103.

SYNTHESISER musics contacts: Anyone interested in Synth music; Jarre, Tang dream; Synergy; Garrison; etc. Please write soon: 60 Minerva Close, Latchford, Warrington, Cheshire, WA4 2XN. 100 per cent reply.

● PEN PALS

A500 contacts wanted. No Lamers. Swap hints, cheats etc. Hope to hear from you soon. Stephen Clegg, 9 St Marks Crescent, Gt Sutton, South Wirral, L66 2XD.

HOT Amiga contacts wanted to swap latest stuff. 100 per cent reply. Send disks or lists to Stu. No lamers please. 50 Victoria Drive, Llandudno Junction, Gwynedd, LL31 9NY.

AMIGA contacts wanted. 100 per cent reply, all welcome, disks guaranteed reply. Write to: Lee, 9 Meadow Close, Louth, Lincs, LN11 9EB or Phone 0507 600711 after 5pm.

AMIGA contacts wanted for relaxed swapping, including Soundtracker Samples, especially in Havant area. Lamers welcome! Phone Ian on 0705 484234.

AMIGA contacts wanted. 100 per cent return. Send lists to Andy, 27 Rennie Grove, Quinton, Birmingham, B32 2SE.

WANTED contacts using Amigas to write, swap etc. Send letters to Bill, 21 Worcester Road, Swinton, Manchester, M27 3RP. Also wanted C64 emulator. All welcome. **AMIGA** contacts wanted. 100 per cent reply to anybody who sends a disk to Bill, 21 Worcester Road, Swinton, Manchester, M27 3RP. Send soon please.

● VIRUS WARNING

ST Viruses wanted for research. Please send any infected or suspect disks and SAE for return to David Rogers, 21 Broawelon, Penycae, Wrexham, Clwd, LL14 2RG.

● SERVICES

HELP can anyone print 1st word ReadMe-Doc. Can supply paper, will pay for printing and return postage. Reply to Derek Plows, Clare Close, Mildenhall, Suffolk, IP28 7NW.

VIDEO shop owners have you got an Amiga, then I've got the programme to run your business. Hires, returns, members, details; Phone Jim 091-2340849 after 5pm.

ANY Spectrum cassettes wanted for deprived Teenager club. Also to put on at a show. Ask for Debbie Tully. Phone: 061-737 3467.

EPROM blowing service needed urgently for A-Level electronics project. Don't hesitate - phone Duncan Corps now on Farnborough (Hampshire) (0252) 547911.

DO you have problems in winning games? Send a S.A.E: Poke Madness, 18 Deacon Street, Belfast, BT15 3EG for the answer. For Speccy owners only. It's FREE!!

NEW P.B.M. Football to start soon. Unique new features. Send SAE to M. Phillips, 17 Cwmgelli Road, Morriston, Swansea, SA6 7PD.

PRINT shop 6A wanted at reasonable price. Ring John 0272 569113.

CAN you write programs? No! I can! I will write any type needed by you. Simon, 6 Ramsgate Road, Reddish, Stockport. Nothing turned away.

● HELP OFFERED

NEED help with deleted files or viruses ? New group starting 26th February offers help to PC, MAC, PCW, Atari ST users. Details from Jae on 0422 844 991.

ANY Archimedes or A3000 users interested in exchanging ideas, animations, tips and pictures. Contact: Phillip Lund, 6 Back Church Street, Barrowford Nelson, Lancs, BB9 6EH.

AMIGA owners do you need sampled sounds, cli/WB/games help? Then send a SAE to Pagie, 50 Victoria Avenue, Sleaford, Lincolnshire, NG39 7LN.

● HELP WANTED

HELP! I have two Japanese games for my Megadrive. Has anybody got English Instructions Book or Copy? - Super Shinobi and Golden Axe. Chris 061-740 0607.

GAME: Serpent From Hell Part 1. Help please: How do I get beyond the magic door? C.J. Ward, C/O 10/12 Parliament Street, Harrogate, N. Yorks, HG1 2QZ.

HELP wanted for Operation Thunderbolt. Will pay £1. Send to J. Hudson, 39 Bodmin Grove, Hartlepool, Cleveland, TS26 0XD or Tel: (0429) 267023.

AMIGA! If you know Amigados according to G'arp can you help? I need Lattice Compatible Arpbase.H and Arpfunctions header files. Phone Mark on 01-445 2513.

● MINI TIPS

DON'T buy the Blitz Copier if you own a 'STM' or 'ST'. Only buy it if you own an 'FM' it won't work otherwise - ROB '90

IN Kick Off Extra Time if you concede a penalty simply hold down fire button to save the ball.

● ANNOUNCEMENTS

SERIOUS ST user (into WP, DTP, Producing Clip Art etc), would like contact with others. John, 49 Haylett Gardens, Surbiton Crescent, Kingston, Surrey, KT1 2ER.

● USER GROUPS

WANTED Atari contacts. All the latest games, 100 per cent reply. Also want latest menus for my collection. Contact Ken Goodall, 9 Spa Road, Preston.

WANTED: Amiga owners who are not just interested in games playing! Billy, 133 Longshaw Drive, Little Hulton, Manchester, M28 6BD. Utils Basic sound trackers write soon!

WOKING computer users: want to start a user group with regular meetings etc. for all machines? Contact David on: 763223 for more information.

ST and Amiga contacts wanted, must be fast and reliable, 100 per cent reply. Write to Dominic at 20 Parkstone Close, Brickhill, Bedfored, Beds, MK41 8BD.

OLIVETTI PCI problems? Join the PCI users group for help on hardware and software problems. Monthly disk magazine. Phone 0924 892106 for free news letter.

PC compatible user group in London! Beginners and experts welcome. Meetings in Whitechapel. Send S.A.E. for details to: ELPUG, 200 Jubilee Street, London, E1 3BP.

JOIN an ST club where you are a name not a number. Help, swaps etc. David Dean, 5 Alpine Drive, Hednesford, Cannock, Staffs.

HELP! Amiga contacts wanted who don't mind helping beginners new to the scene. Send disk, info, list, anything. To Mike Grey, 73 Redvers Road, Brighton, BN2 4BF.

SHARP users, Sharp users club. The only one left for full support etc. Any model. Andrew Ferguson, 11 Harcourt Close, Henley On Thames, Oxon, RG9 1UZ.

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Contact: in complete confidence Peter Moreland

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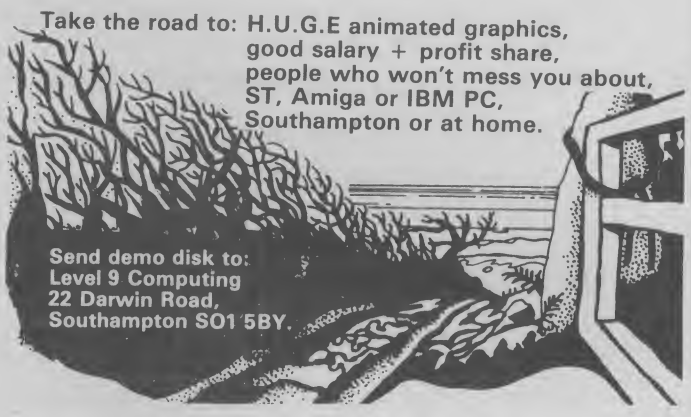
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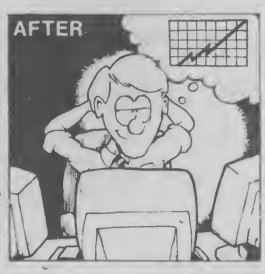

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Reviewers are no fools and as everyone knows they are hard to please. We at The Sales Curve strive to produce games which are not only fun but represent the best in technical advancement and quality. The credits listed above on our most recent products, Silkworm and The Ninja Warriors, reflect this fact.

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But please, please, please, don't phone those awfully nice Sales Curve people, because if you do, you'll never phone us. And whatever happens, try to avoid Simon Pick (please don't phone 585 3308 and ask for Simon)....he is simply too friendly and clued up to be a nasty, mean, stupid project manager!

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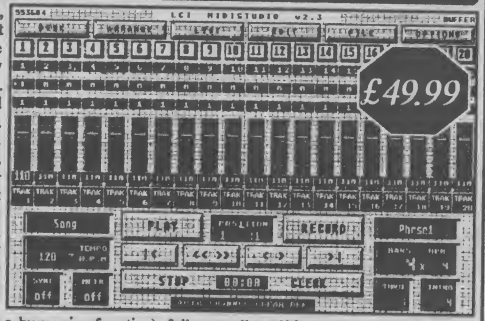

Midistudio is an attractively priced, 20 track Midi Sequencing package. It can record up to 682 bars per phrase (pattern) on up to 100 phrases. Any phrase can be placed on any track. Tracks can be soloed and muted and tracks and phrases can be named. Program numbers can be displayed in a variety of ways including 0-127, 1-128, in banks from a11-b88 or a01-b64. The Desk features sliders to set relative volumes on each track and you can even do a mix on the fly. Midistudio also has a clock to display the length of the last playback. Step time note edit functions are available including copy, split, merge, append, transpose, velocity editing (including a humanize function), full controller editing and different levels of quantizing. Midistudio works in medium and hi res and a demonstration disk is available for just £3.99.

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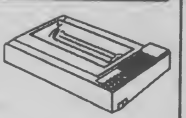

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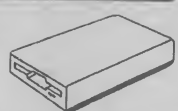

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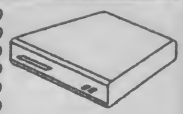

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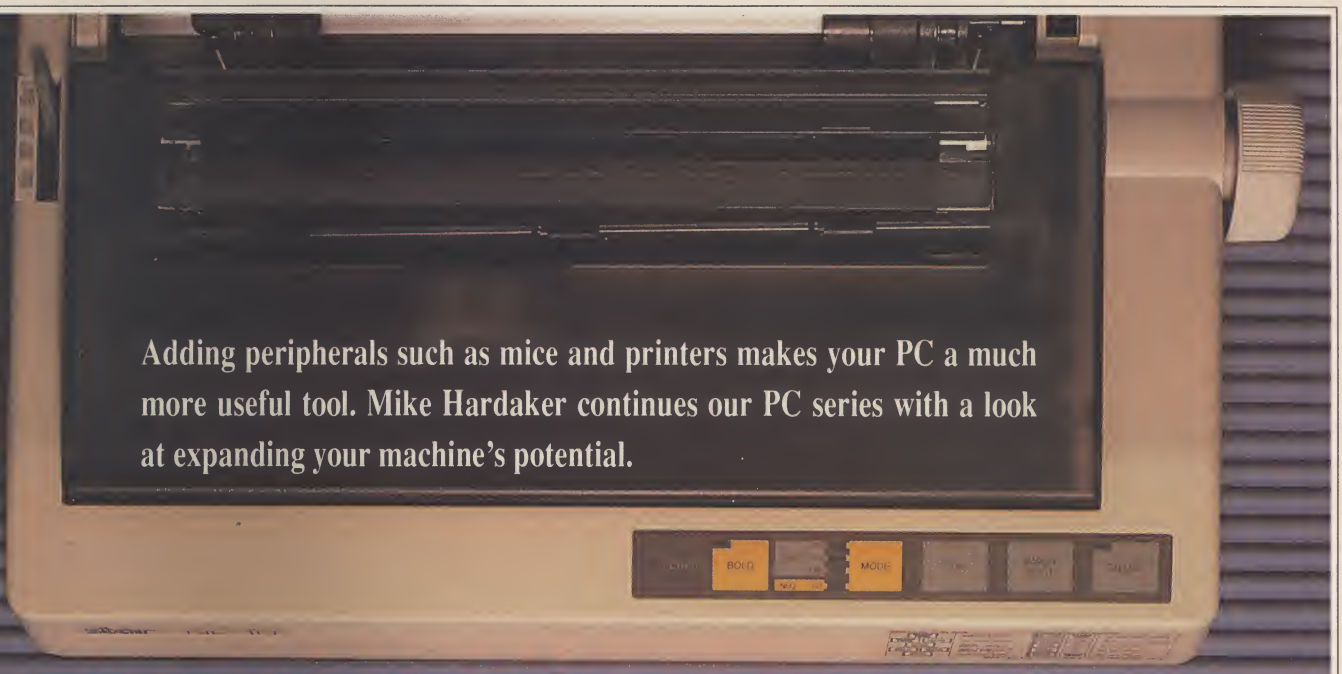

Adding peripherals such as mice and printers makes your PC a much more useful tool. Mike Hardaker continues our PC series with a look at expanding your machine's potential.

EXPANDING YOUR PC

From the beginning of this series, we've been stressing the PC's flexibility as its greatest strength. The source of that flexibility is its expandability. Once you have a basic PC there are all sorts of 'peripherals' you can attach to it. Peripherals are those things which are not essential to the basic function of a PC, such as printers and mice.

PRINTERS

A PC is great at processing information, but very bad at communicating it to people who are not sitting at the keyboard. Obviously, if two people both have PCs, they can look at each other's data by exchanging floppy disks. There are occasions, however, where the charm of the paperless office begins to pall and you want to see your work as 'hard copy'. That's where a printer comes in. You just plug it into a parallel port and suddenly you have your words in back and white on paper.

DOT-MATRIX

Dot-matrix printers (DMPs) can be the least expensive PC printers. They can also be the most versatile. Essentially, a DMP punches 'pins' at an inked ribbon, leaving an impression on the paper which is on the other side. These pins are arranged in a rectangle rather like an old-fashioned hairbrush, and punching different combinations of pins causes different characters to appear.

As the characters are created in this way, it is possible to 'type' things other than the standard alphabet with a DMP. In fact, if you can build up an image out of dots then you can print it out with a dot-matrix printer. Since newspaper photographs are composed entirely of dots (as are the pictures in *Express*) it is theoretically possible to create photographic images with a dot-matrix printer.

Theory and practice are not always the same, however, and the dots necessary to create a reasonable imitation of a photograph have to be very small and very close together (which is why

• Printers come in a vast range of print qualities and paper widths. Choose the combination which suits you, but make sure that Epson compatibility is an option.

Express is not printed on a DMP). However, business graphics such as pie-charts can look pretty good with even a cheap matrix printer.

9-PIN

The simplest dot-matrix printers are the 9-pin matrix printers. These are so called because the print head (the bit that punches the ribbon) is nine pins high. This means that a normal letter or number will be printed nine dots high.

Nine dots do not produce a particularly clear character since white space can clearly be seen between the dots, so many DMPs offer something called 'Near Letter Quality' or NLQ. This is done by making the print head print each line of text twice, with the second 'pass' being slightly out of line the first, creating a character which is effectively 18 dots high. A 9-pin printer's NLQ mode is just about acceptable for correspondence, but it won't really impress.

Since your computer software must understand what sort of printer it has at the end of the parallel cable, it makes sense to have one which is pretty standard. Most printers emulate one or more of the Epson FX-80, the IBM Graphics Printer and the IBM Proprinter. If someone tries to sell you a printer which won't emulate at least one of these, don't buy it.

The starting price for 9-pin DMPs is now well under £150, with the Star LC10 having a particularly strong reputation in this area.

24-PIN

These use 24 pins instead of nine. The advantage is higher print quality. The NLQ mode on a 24-pin printer is really pretty good, good enough for most cases. On the other hand, 24-pin printers cost more than their cheaper cousins. Star, again, has the reputation at the budget end (with the LC24-10) with the standard to look for being the Epson LQ range.

All DMPs tend to come in two widths. The 'standard carriage' allows 80 standard-sized characters to be printed on one line (the same as you can see on a PC screen) whereas the 'wide carriage' prints 132. Standard-width printers are good enough for most people's purposes.

Also, DMPs tend to offer a choice of paper type. The standard is good old-fashioned fan-fold computer stationery, with sprocket holes in the sides. Some also allow the use of single cut sheets (vital for smart letters) and a few even offer the facility of a bin which will hold 50 or so sheets of A4 – just the thing for printing out that novel.

LASER

These use much the same technology as photocopiers, putting ink or 'toner' on the paper via a light-sensitive drum. The images – text or graphics – are built up by combinations of dots, as in a DMP, but at a very high resolution. The standard resolution is described as 300 dots per inch, a matrix of 300 x 300. They are smart, look good on the desk, and are very quiet. Anything under £1,000 is very cheap, and these will not normally be able to handle a full page of graphics. Also, you are limited to pre-cut paper.

The standard for lasers is the Hewlett-Packard LaserJet II. Any business laser worth its salt will emulate this.

The Real Men in the laser printing industry use PostScript *(Many of them are actually Real Women these days – Ed)*. This is a highly sophisticated way of handling text and graphics and requires a special printer which will be described as 'PostScript compatible'. For high-level desktop publishing this is the way to go, but it'll cost you over two grand.

DAISYWHEEL

Daisywheel printers operate very like a typewriter, bashing a pre-formed letter onto a ribbon. The letters are on strips are arranged in a circle which makes the print head look like a daisy, if you squint hard enough.

If you want to change type-style or try some italics you need to change the print head. And you can't print graphics. Daisywheel printers produce excellent text, but they are slow, noisy and almost extinct – almost no new software supports them. If you see one going very cheap and only want to type letters, then it may turn out to be a bargain. Otherwise, avoid.

INK-JET & COLOUR

Ink-jet printers spray ink at the paper out of tiny nozzles, like miniature air-brushes. They produce excellent quality text and graphics but are not cheap. Look for the same emulations as on 24-pin DMPs.

Colour machines haven't really taken off yet. They either use DMP or ink-jet technology, with lasers just starting to appear. Frankly, the quality isn't too special, but if you must have colour, make sure your software supports the printer you fancy.

PLOTTERS

Plotters are different to printers. They use small fibre-tip pens to draw images on to paper or acetate. For fine technical drawing they are ideal, since unbroken lines (rather than combinations of dots) are used. Plotters differ from printers in that they usually use the serial, rather than the parallel port. The Hewlett-Packard plotters provide the low-end standard, with Roland being strong where the big money is.

SCANNERS

If a laser printer is like half a photocopier (the printing bit) then a scanner is like the other half – the part that reads in information. A scanner is a device which allows you to get information into your PC directly from a piece of paper. This is useful if you want to get illustrations into a desktop-published document, or if there's a lot of text on paper that you want to computerise. These days, highly sophisticated software exists which allows your computer to 'read' a page of *The Times* and place it straight into a *WordStar* document for example. The *de facto* standard for scanners is the HP ScanJet, although as this is still young technology that may well change. As with most things, you get what you pay for – and you'll pay a lot.

DIGITISING CAMERAS

These are similar to scanners, but are specifically for taking high-quality visual information on to the PC. If you've ever seen the 'industry-standard' picture of a baboon staring at you from out of a PC's demonstration screen, that gives you some idea of the quality that can be achieved – it's like watching the TV. Unfortunately, the really good stuff costs many thousands of pounds.

MICE

Mice are little plastic things about the size of a packet of 20 which can be move the cursor around the screen as they are moved around the desktop. Also called 'pointing devices' they are essential for serious graphics-based work such as desktop publishing and engineering design. They are also very handy with all sorts of software, as Apple proved with the Macintosh range of computers.

Increasingly, software supports (or expects) the use of a mouse. After a printer, a mouse is the most useful peripheral you can own. The two standards are the Microsoft mouse and the Mouse Systems mouse. Make sure your rodent can emulate one or both of these, with Microsoft being more important. Most mice use the serial port, although one or two come with their own card. These are called 'bus mice'.

There are two main types of mice – optical and mechanical. Optical mice shine lights onto a reflective surface and use the information they get back to plot a

• A typical laser printer: look for Hewlett-Packard LaserJet compatibility and plenty of memory – you need at leadt 1.5Mb to do serious DTP work.

position. Mechanical mice are simpler, relying on the movement of a ball (about the size of a squash ball) which is held in the body of the mouse. Mechanical mice seem to work better, on the whole, and they are also useable without any special pads.

The Amstrad PC1512 and PC1640 come with their own mouse, which doesn't emulate the Microsoft or Mouse Systems standards. Software kludges are available for getting around this, for about £20. If, like many people, you hate the feel of the Amstrad mouse, Naksha offers a good alternative for a reasonable sum.

A tracker ball, incidentally, is a mouse lying on its back – a ball that stays in one place while you twirl it around in its mounting. They make good mouse-substitutes if you are really strapped for desk space.

JOYSTICKS

The PC has only recently evolved to the state where it can be considered a good medium for graphical-based games. The best early PC games were Infocom's text adventures which only required a keyboard. For things like the latest generation of flight simulators, however, a joystick really is a must.

Amstrad provided a joystick port on the PC1512, which most games, unfortunately do not support. If you want to run those games which have 'joystick required' written on the box you must have an IBM-compatible joystick. The genuine IBM games card is not available in the UK, but a number of clones are. Once the card has been installed in a slot, you can plug in any of the many joysticks which are sold for Amigas, STs and the like. Discounting is rife, so expect to pay no more than £20 for the card. The price of the joystick depends on how flash you want it to be, but £10-£15 seems to be about average.

EXPANSION

When you buy a PC, you buy a monitor, a keyboard and a system unit. The system unit contains the central processing unit (CPU), the main memory or RAM, and various other essentials such as the power supply unit (yes, that too has an acronym: the PSU). The system unit also contains a lot of fresh air.

This does not mean that the PC manufacturers are ripping you off – on the contrary. The fresh air surrounds the PC's expansion slots.

From the very beginning, IBM intended to make it easy for users to add printers, plotters, different video adapters, more RAM – all sorts of extras. The IBM PC therefore came with 'expansion slots'. These provided a standard interface for adding bolt-on goodies to the machine. The slots are often referred to as the 'expansion bus'.

Into the slots, you can plug expansion cards. Sometimes these provide a self-contained function, other types are merely interfaces to other, external, pieces of hardware.

8-BIT SLOTS

The original PC came with five 8-bit slots. These are so called because the design allows eight bits (ones or zeros) to travel from the expansion card to the 'bus' – and thus into the CPU at any one time. Since the first PCs came with very little RAM, users soon found they were using up all the slots with cards containing extra memory, so when the PC-XT came along it was blessed with an extra three slots.

Nearly all PC expansion cards fit into 8-bit slots and 95 per cent of the machines on sale at the moment have slots which will accept 8-bit expansion cards, so 8-bit is the vital standard.

SERIAL AND PARALLEL PORTS

The two most common things to find on expansion cards are serial ports and parallel ports. Since these are so very useful, they are now often built into the machine as standard. It doesn't matter whether yours are on cards or built in – they are the two most useful things to have if you want to expand your PC.

Serial ports are used for controlling a variety of peripherals. The key ones are mice, plotters and modems. Since many people find they want both a mouse and a modem, it is increasingly common to see two serial ports fitted as standard. Serial ports are also known as 'asynchronous communications ports' or COM ports (after MS-DOS's name for them).

Although some printers are controlled by a serial port, most use the parallel port. This is why the parallel port is vital, since a printer is the single most useful peripheral most of us can own. Parallel ports are sometimes known (wrongly) as Centronics ports. A Centronics port is actually the port you find on the printer itself, so the cable connecting the PC and the printer is called a parallel–Centronics cable. Hence the confusion.

16-BIT SLOTS

The PC-AT had 8-bit slots, but it also had some 16-bit slots. As you might expect, these can process 16 ones or zeros at any one time. AT-type slots can take 8-bit cards but not vice versa. Fortunately, very few cards are on the market which exploit the 16-bit slot, so compatibility should not be a major issue.

THE 'AT' BUS

PCs which have standard 8-bit or 16-bit slots are generally (if slightly sloppily) referred to as having the 'AT bus'. This is increasingly referred to as Industry Standard Architecture or ISA, to differentiate it from the two standards which have since appeared – Microchannel Architecture and Extended Industry Standard Architecture.

MICROCHANNEL

Microchannel architecture (MCA) first saw the light of day with the launch of the IBM PS/2. Based on proprietary IBM technology, it offers technical and performance improvements over the traditional AT bus. However, you cannot use AT-style cards in MCA slots. Since nearly all of the useful expansion cards are for the AT bus, this is something of a handicap.

Since microchannel machines had 'IBM' written on the front of them, most of the large corporates soon embraced MCA, however. Scenting money, this has led many PC expansion card manufacturers to start producing MCA cards. They are technically superior to their AT equivalents (at least in theory) but they tend to be significantly more expensive. Also, since the PS/2s (and other MCA machines from companies such as Apricot and ALR) are sold mainly to big businesses, the expansion cards available tend to reflect the needs and desires of the corporate world, rather than the small business.

MCA comes in two flavours: 16-bit and a heftier 32-bit. Sixteen-bit microchannel cards will fit in 32-bit MCA machines.

EISA

Feeling rather left out in the cold by IBM's decision to keep microchannel to itself, several PC manufacturers set out to produce a rival. This arrived as Extended Industry Standard Architecture (EISA), and offers the technical cleverness of MCA combined with AT-compatibility. EISA slots process 32 bits at a time, but can take 8-bit and 16-bit PC cards. Some people see this as being the best of both worlds; to others it is a wasteful compromise. Since the first EISA machines have only just started appearing, it is too early to say who is right – IBM with its MCA or Compaq and Olivetti with their EISA.

HOW MANY SLOTS?

In the beginning, almost nothing was built into the PC's system box. Everything other than the CPU and a little bit of RAM was added in the form of cards. Therefore, the video adapter was one card, there might be a couple of memory cards and then there would be the more useful interface ports, also sitting on dedicated cards.

Many modern machines have the video adapter built into the main system board, enough space on the motherboard for vast amounts of memory, and the commonly-used ports built-in.

Therefore, the number of slots you need depends on how much you already have on the PC. The number of 'free slots' is important. For most users, having three 'free slots' is about right. This means that once the video adapter, RAM, and the serial and parallel ports (see below) have been installed, there should still be three available slots. Depending on the design of the particular PC this might mean you have three slots altogether, or it might mean you have eight. ■

THE AMIGA'S BOLT-ON PC

● POWER PC PLUS

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Is there a market out there for an Amiga A500 PC card? KCS thinks so, and judging by the package it's put together, it could be a huge one. Andy Storer took a trip to Holland to assess KCS's claims...

"We wanted to combine the reliability of MS-DOS with our plug-in-and-run philosophy," proclaims Peter Verhey, the programmer behind KCS's Power PC board for the Amiga A500. This small Dutch company is composed of ex-C64 devotees who developed and marketed the the first RAM freezer for Commodore's baby – the C64 Power Cartridge.

The Power PC Board is a different proposition altogether. Verhey's intention is to deliver a self-contained PC emulator that sits on a 15cm x 7cm card slotting into the underside of the Amiga. "There's still a feeling that the A500 can't be used for serious work – there's a view it's too unstable – we want to offer users all the functionality of PC compatibility at a price they can afford," says Verhey. A fine intention and one that's been a little more difficult than you may imagine.

The card has been some 15 months in development and holds an NEC V30 processor, a custom chip, a clock and 1Mb of RAM. The V30 is a 16-bit 8086-clone running at 7.14MHz, the BIOS opted for is the Phoenix system – a standard for MS-DOS computers. The compact card fits into the slot normally intended for memory – a fact Commodore US expressed surprise at. Verhey has got round this problem but is understandably reticent about passing the secret on. Whatever the method used it works admirably.

The on-board RAM chips included supply both the PC and Amiga with an extra 0.5Mb each. If you don't want to use the PC emulation you can configure it's associated memory as a RAM disk device. This too is quite ingenious, as the normal Amiga operating system isn't capable of switching between RAM in this way.

INSTALLATION

PC emulation is achieved via a short GFA BASIC installation program which configures the Amiga to control the PC card, disk drives, peripherals and display modes. Although hard disks haven't been implemented yet, the hardware is sufficiently flexible to address all serial devices. It can't handle the cards needed for PC scanners and so on, but serial mice, joysticks, modems and printers are supported.

The configuration program prepares the Amiga to handle all I/O functions – data being streamed out of the board and to the 68000 which then sends data on to the desired channel. First of all you need to specify which drives will be employed as PC devices. Here you can use the Amiga's own internal drive as a double-sided PC drive – an essential but tricky feature that took around 40K of assembler to implement. Unfortunately, KCS is still in the process of writing the formatting routine, though this should be finished in the proverbial 'next few weeks'. In the meantime , you're able to plug a PC 5.25-inch or 3.5-inch drive straight into the Amiga's external disk drive port and read and write to it immediately after it's been installed. Since the PC Power Board treats all screen handling as direct screen I/O, it even promises full compatibility with PC programs that bypass the BIOS and hit the screen hardware directly.

• The Power PC slots into the RAM expansion port underneath the Amiga.

Firstly you're allowed to specify the PC video mode you wish to emulate – currently CGA and MDA are catered for – but in CGA mode you can choose any four colours from the Amiga's palette of 4,096! EGA and VGA are both possible but as yet not implemented since higher resolution will slow refresh rates right down unless extra RAM amounting to around 2Mb is available to the Amiga O/S. Otherwise KCS's tests have shown the 68000 will run at only 10 per cent of normal speed – a rate probably not too dissimilar from the snail's-pace software-only PC emulator *Transformer*.

Video configuration also allows you to alter character size, cursor speed and colour and turn interlacing on and off. This latter feature enables PAL-compatible display output so you can record PC output to video – a capability not available on PCs. Volume control can also be determined here as can the size of the printer buffer – up to 128K is supported with the printer being able to be reset without a full Amiga reset.

MOUSE SUPPORT

PC mouse users will be pleased to hear they can configure mouse installation to Microsoft and Mouse Systems standards and specify the number of buttons they wish to be operative. The Amiga joystick ports can be configured as PC COM1 and COM2 while serial communications can be set to go all the way up to 9600 baud. The delay and repeat speed of the Amiga's keyboard can also altered to suit the PC user's needs.

Once each of the various menu options have been determined a small file is written to enable you to boot directly into PC mode. The resultant file can either be saved as either as a normal boot file, runnable from Workbench, or as six sectors that are stored in the boot sector of a PC disk. This latter option is ideal since it means that once you've set up your every-day configuration you can simply copy the parameters to all your PC program disks – on whatever format – and boot directly into them without even catching sight of the Amiga system acting as a host to the PC card.

After loading in MS-DOS, you are able to get up and running immediately to find that you have 704K at your disposal. The Landmark benchmark utility reveals that the PC Power board runs around three times as fast as the original PC-XT, that's slightly faster than an Amstrad PC1640. Once running your favourite word processor you'll also be surprised that all the Amiga's function keys emulate their respective PC functions automatically, and all key combination controls are effective. To all intents and purposes you have a fully-functioning PC at your control.

A MULTI-TASKING PC ?

Anyone who has an A2000 with a Bridgeboard fitted will tell you that PC emulation is painfully slow in a multi-tasking environment. To maximise speed, KCS has opted for a straight single-tasking machine – it points out that if you want multi-tasking you can always run multitasking PC software! And although you can configure your internal Amiga drive to read and write to PC format you can't do this from within Amiga mode or vice versa. If you want your Amiga program to read or write PC data files then you'll still need *DOS to DOS* to convert the files. "Why re-invent the wheel," is Verhey's judgment on that one.

WHAT'S TO COME

It must be stressed that at present the KCS Power PC board isn't complete. Video modes don't have any graphics handling capabilities yet, so we could only test it with character-based programs only. EGA display mode is next on the cards. There are as yet no disk formatting routines built-in, and hard disks aren't as yet supported. KCS is working on a software driver for the A590 hard disk first, with others to come as and when the respective drivers are available. Also on the immediate horizon is a fast utility that will let you dump RAM to floppy and vice versa in one go!

WHAT COMES WITH IT

At £299, The PC Powerboard represents extraordinary value for money. Besides a fully-functioning PC on a card, you get an extra 1Mb of memory built-in, a RAM-resident hypertext-based DOS help utility – the Phoenix *DOS Help* worth £55 – an off-the-shelf package of Microsoft's MS-DOS version 4.01 worth £80, and PC GW BASIC.

At this kind of price KCS obviously reckons it has a winner on its hands. ■

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TECH TIPS

Does your PC keep packing up? Is your Amiga less than friendly? Would your ST try the patience of a saint? Write to Uncle Tech Tip, he'll see you right. Send your sorry stories to Uncle TT, 30 Monmouth Street, Bath BA1 2AP. There's a prize for the most pitiful tale

HELP! Sirius B

I have bought a Sirius 1 computer for a very reasonable price. It has twin 1.2Mb floppy disks, 512K of RAM and is in good working condition.

I have obtained some software for the MS-DOS format that it uses, but the problem is what else I can do with it?

I read with interest the article in issue 62 about do-it-yourself PCs, and it occured to me that I could convert it by altering the motherboard, or would I need to change anything else?

The other alternative would be to use either software or hardware emulators to expand my possibilities. If there are any, could you suggest possible makes and prices?

M D Orbell, Scotter, Lincs

Unfortunately M D, you have bought an MS-DOS compatible computer, rather than a IBM-PC compatible. The former will run some software intended for the PC and may be able to use some hardware, but on the whole, the MS-DOS compatible was an experiment at making a cheap PC-look-alike (rather than compatible) in the days before Amstrad put PCs into the hands of everyone. Sirius made them, Apricot made them and one or two other less-notables had a stab, but the MS-DOS compatible died out and today you can pick them up in church bazaars for a pound or two.

If you've found a source of software then stick with it. Get yourself a word processor, a database, maybe a spreadsheet or some comms software and get what use you can from the computer. It is a usable machine, but you must be aware of its limitations.

HELP! Which computer's best for DTP?

Could you advise me on the best home computer, printer and monitor for desk top publishing and word processing?

At the moment, I own a Commodore A500 Amiga model and a Commodore 1000 printer which are now two years old, so I feel it is time to upgrade my system. My new preferences are for a 1040 STFM and monitor, 2Mb Mega ST and monitor or an Archimedes and monitor.

Are these good choices or should I stay with the Amiga 500 model. Could you advise me on which printer is the most useful for DTP printouts?

P. O' Kane, Walsall, Birmingham.

Although the Commodore Amiga would upon initial examination appear, to be the best computer for desktop publishing, due to its superior graphics manipulation capabilities, it is in fact severely under-supported by good DTP software. One or two packages are starting to make their presence felt; but they simply cannot match the likes of *Calamus* when it comes to document manipulation features.

The Archimedes is worth considering, as DTP software with quality font technology is now becoming available – but the price is a problem.

So that leaves the 1040 and Mega STs. What do you need most of when DTPing? You guessed it, memory of course! A 2Mb Mega has a whole megabyte of RAM more than the 1040. The Mega also has a superior modular design and a really good keyboard. So my advice would be to plump for the Mega, an Atari SM124 mono monitor and *Calamus* (£399, Signa Publishing, 0252 341600). This set-up will enable you to produce some extremely good-looking professional results without any compromises.

As for a printer, the best choice – particularly for DTP – is the laser printer, and Atari's own offering is fast. However, even the Atari laser is expensive so perhaps you should choose one of the popular Epson compatible dot-matrix devices such as the Panasonic KXP1081 or Star LC10, both priced under £130 and available from suppliers listed in Shopping Express.

If you need high quality, you could send your output to a bureaux such as that run by Signa.

HELP! Getting Pascal

Could you please print this in your help column, or if possible, reply personally. I desperately need information about Kyan Pascal for the Atari 8-bit machine, plus where to obtain a copy of the compiler and/or the Kyan system utilities. Any information would be greatly appreciated.

C. Skipsey, Birtley, Co. Durham.

These Atari 8-bit questions are always the devil's own to answer, because unfortunately there never was a UK distributor or importer of Kyan Pascal (at least not an official distributor).

The language itself appeared to be a full rendition of Pascal to ISO standards and featured many bolt-on code modules to take advantage of the 8-bit's graphics and sound abilities. Equipped with routines for recursion, powerful data structures and modular programming techniques such as the case statement and the while-wend loop, it offered a powerful alternative to Atari BASIC. Kyan Software, the programming house responsible for the language, produced a bi-monthly magazine devoted to all things Pascal, although how many issues went to press is anyone's guess.

All this is as nothing though, because you can't get hold of a copy and it's a moot point whether Kyan still exist. In case they do, here is their address: Kyan Software, 1850 Union Street 183, San Francisco CA 94123, USA. If any 8-bit owning techtippers have a copy of this (or maybe any other Pascal compiler?) that they no longer need, pass it on!

TIP Furry rodent

Anyone wanting a furry mouse cover can get one from Byteback on 0636 79097 (6 Mumby Close, Newark, Notts NG24 1JE). The cover costs £6.90. Mine is called Betsy and she would like to know if you are planning to have a tacky computer accessory column.

The Android, Rhyl, Clwyd.

What Mouse Cover Monthly, perhaps? Disk Label Weekly or even Write Protect Notches: Care and Maintenance. Hang on though, haven't all these subjects been covered previously by a certain other computer weekly?

HELP! MSXtra software?

I have a Pioneer PX7 Video Computer which is an MSX computer that can use any software designed for MSX computers *(well, there's a turn up for the books – Uncle Techtip).* It has been pretty difficult getting any software (and there's another – Unc). I shall be happy if you could give me the address of Mr Ian Steels of Westwood, Peterborough whose letter you published on page 58 of *Express* 63. You advised him to get rid of his Sanyo MSX computer. Well, I shall be quite happy to purchase his software if he wants to sell either separately or with the computer. On the other hand, if he is not ready to sell, I would still like to get in touch with him with a view to exchanging software.

Could you also provide me with the names and addresses of companies that sell software for MSX and the addresses of user groups where I can have access to MSXtra software?

Dr Tunde Gbolade, Doctor's Residence, Queen's Park Hospital, Blackburn, Lancs BB2 3HH. Tel: 0254 63555

T'wouldn't be right and proper for Uncle Techtip to pass on the addresses of his techtippers without permission I'm afraid Doc, but I've published your address and Ian can write to you if he so chooses. Anyway, within minutes of this

issue hitting the streets a thousand and one disgruntled MSX owners will be trying to off-load their unwanted kit on you.

Companies still supplying MSX software? You could try Nightdare, 11b Walnut Road, Chelston, Torquay, Devon TQ2 6HP. They still hold a range of applications for the much-neglected Japanese standard. As for a user group, write to MSX UK, Craig Bell, North Lodge, Cairnhill Road, Airdrie, Lanarkshire ML6 9RJ. Tel: 0236 65045. Or MSX Link, Keith Neal, Austerby House, 80 Austerby, Bourne, Lincs PE10 9JL or the MSX User Group, Lee Simpson, 3 Mayfair Place, Tuxford, Newark, Notts NG22 0JD.

■TIP Notch or not

In issue 63 a questioned was answered about disk notchers. I have used a leather hole cutter which I happened to have at hand. Use the largest cutter, then trim sharp points left sticking out with small cutters or small scissors. Also, use another disk as a template. Leather notchers are available from good DIY shops.
J. S. Mardell, Stoke Newington, London.

■HELP! Printer OAP

I've just got hold of an extremely old (about 1984) printer which is an Olivetti PR15. I am not writing to boast – just to see whether it is compatible with the Amiga. Connecting is the easy bit as it came with a lead for connection to the parallel port. Can you tell me whether I can use one of the printer drivers on the Workbench 1.3 Extras disk or will I have to search through the public domain libraries?

The next thing is a scanner for the Amiga. I have a digitiser (Pro Sound Designer Gold) and I want a picture digitiser. Getting DigiView will cost too much for what I want to use it for, but a scanner comes at the right price which is under £200. Can you recommend one for doing simple grey-tone pictures?
Andrew Finlayson, Blackpool, Lancs.

These old, obscure printers are difficult to drive simply because the computer industry was still thrashing about for a decent standard to adopt (eventually settling on Epson control command codes). You might try an Epson LX or FX80 driver, but the machine is almost certainly not Epson compatible. You're probably going to have to search through the public domain libraries and even that's doubtful, so why not construct your own? Most good software packages enable you to input non-standard printer codes so that they can drive your printer and although it's a drag, the results will be worth it. Full compatibility is always something worth having.

As for a scanner, you could do worse than look at the Geniscan GS4500 scanner from Datel Electronics. The device offers a range of features including grey scales, full editing software and a scan resolution of 400DPI.

The Geniscan GS4500 costs £169.99 and can be ordered by calling 0782 744707.

■HELP! Drive disaster

I've got an Atari 520 which has been upgraded to 1Mb of RAM and a 1Mb disk drive which I put in myself. It also has an A/B switch in the back so that either drive can run as A. The second drive is an IBM 5.25-inch 1Mb model which is connected to the computer with a ribbon cable and a 34 pin plug via the A/B switch (not to the second drive socket).

Ever since I put the 1Mb internal drive in the computer it refuses to acknowledge the second drive is connected after about an hour's operation.

Everything works fine if I turn it all off for 10 minutes then start again but the same thing quickly happens. The installation instructions with the internal drive said I should remove the motherboard along with the drive if I had one, as the new drive didn't need it and the connections weren't compatible. Would this be the cause of the problem?

Everything worked fine when I had the original 0.5Mb disk drive installed.
Chris Good, Havant, Hants.

This non-removal of the motherboard is almost certainly the problem. Why didn't you follow the installation procedure correctly? Did the new drive fit easily anyway, so you decided to leave well alone? Understandable, but then bound to lead to problems later.

Open up the ST and start again from scratch. Follow the drive fitting instructions to the letter and if you still experience problems check all connections to the 5.25-inch device acting as your second drive. Problems sometimes occur if you mix 3.5- and 5.25-inch drives as the latter requires a slower read/write head access time than the former (although this shouldn't result in the drive being unrecognisable). Do try the set-up with the original drive installed again. Try the 0.5Mb drive in place of the 5.25-inch. Does the problem still occur? If so, then it is definitely the motherboard/new drive problem.

■HELP! Wee DRAM

I read the Tech Tips pages avidly every week because you always seem to be helping people with genuine problems. I own an Amiga 500 and from looking inside, it appears to have one of the new one megabyte motherboards and also has the new fatter Agnus.

The question is, the motherboard only has half a meg fitted in four 44C256 DRAMs, there appears to be space in between each of these four DRAMs to accommodate another four chips, which I gather would bring the motherboard up to 1Mb. Can I just fit the necessary four chips into it, to bring the machine up to 1Mb and if yes, where can I get four 44C256 DRAMs with 120ms access times or less and how much will I have to pay for them?
A. Rodenhurst, Oakley, Fife.

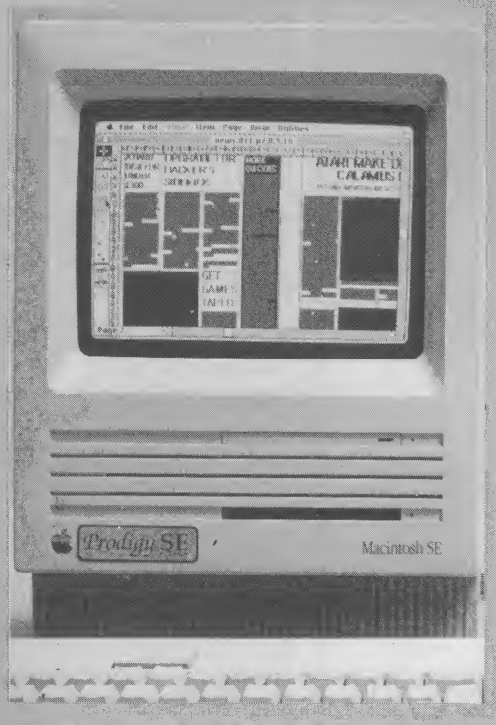
No! And it's a big no. The motherboard does indeed have an extra four RAM chip sockets but these are not actually connected to anything – they are for 'future expansion' according to Commodore. Apart from anything, opening the case and tinkering will invalidate your warranty.

If you really must have more memory, then have a look at some of the proprietary RAM upgrade boards available from a variety of suppliers. These are specially designed for easy fitting.

Although I could recommend one over another, the chief differences between them are in price, so have a grub about in Shopping Express or *Express*' sister publication *Amiga Format* for a suitable supplier.■

■HELP! I've got a baby Mac, and I want it to grow up...

I've just got hold of a Mac 512K (maybe a 512KE as it has 800K drives) and although I've managed to get *PageMaker* 2.0 limping along, I really need more memory. So to business. Can I add another 512K of RAM and a hard disk and if so, where do I get them from. Also the original mouse and keyboard are a bit too chunky for comfort but if changing them is expensive I'll learn to love 'em.
P. Bowden, Charlton, London.



• Apple Macintosh: loads of top-notch software, but a megabyte of memory is essential.

Congratulations! The Mac is a delightful (although slow and prone to crashes) computer that will become your personal friend and beloved plaything. It sounds as though you have the Mac 512KE – the 512K had a 400K drive. You can add another 0.5 Mb of RAM, and although the process is fairly straightforward, opening the case can be a nightmare! Contact Mac Budget System Services on 021-784 0697. For £172, they'll bung 512 of finest K your way.

If you do have an E (i.e. Enhanced) machine, adding a SCSI hard drive is no problem and they're available from a variety of Apple retailers. Have a look through one of the specialist Mac magazines – prices start from around £350. If however, the machine is a 512K with an upgraded drive, there's no SCSI port so you can't attach a hard 'un. Have a look at the rear of the machine. If there's a port with an oblong symbol above (with a 'dot' in the corner – it's supposed to look like a hard drive), at the bottom of the case in the centre then that's the hard drive port and all is well.

It's possible to upgrade the Mac 512 to a Plus, but Apple no longer manufacture or market the kit, although you may be able to find one gathering dust at an AppleCentre store. Trouble is, the kit costs around £750 and you could (almost) buy a brand spanking new Plus for that! You pays your money and takes your etc...

Oh, and don't replace the keyboard or mouse. You *will* learn to love them, I assure you.

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1MB Module	113131	185
4MB Module	113132	545
DESKPRO 386/20		
1MB Module	113131	185
4MB Module	113132	545
DESKPRO 386/20e		
1MB Module	113131	185
4MB Module	113132	545
1MB Exp/Brd	113644	195
4MB Exp/Bd	113645	598
DESKPRO 386/5		
1MB Module	113646	185
4MB Module	112534	545
1MB Exp/Bd	113633	195
4MB Exp/Bd	113634	598
DESKPRO 386/16		
1MB Kit	108071	255
4MB Kit	108072	698
1MB Exp/Bd	108069	294
2MB Exp/Bd	108069 + 108071	Call
4MB Exp/BD	108070	1019
8MB Exp/Bd	108070 + 108072	Call
PORTABLE II		
1MB Kit	113012	94
PORTABLE III		
512KB Kit	107331	71
2MB Kit	107332	182
PORTABLE 386		
1MB Kit	107651	288
4MB Kit	107653	930
4MB Extra/Bd	107654	930
COMPAQ SLT/286		
1MB Bd	110235	278

2 IBM MEMORY

MOTHERBOARDS MODULES:	IBM P/No.	PRICE (£)
PS/2 25		
128K Kit	78X8955	34
PS/2 30/286		
512K Kit	30F5348	86
2MB Kit	30F5360	229
PS/2 50/60		
As above – fitted with IBM adaptor Board P/N 1497259		Call
PS/2 50Z		
2MB Module	6450604	274
512K Kit	30F5348	86
2MB Kit	30F5360	229
PS/2 55SX		
2MB Module	6450604	274
PS/2 70 Portable		
2MB Module	6450604	274
PS/2 70 E61 & 121		
1MB Module	6450603	152
2MB Module	6450604	274
PS/2 70 A21		
2MB Module	6450608	286

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1MB Bd	6450375	193
PS/2 80-111 & 311		
2MB Bd	6450379	322

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512KB	315	4MB	589
1MB	285	6MB	764
2MB	399	8MB	949

PS/2 50, 50Z, 60, 70 and 80

	(£)		(£)
512KB	324	4MB	597
1MB	299	6MB	773
2MB	408	8MB	957

3 TOSHIBA MEMORY

	TOSHIBA P/No.	PRICE (£)
PORTABLE T3100e		
512K Card	PC9-PA8340U	148
2MB Card	PC9-PA8341U	344
PORTABLE T3200		
3MB Card	PC6-PA7137U	530
PORTABLE T5100		
2MB Card	PC7-PA8301U	344
PORTABLE T5200		
2MB Module	PC10-PA8304U	363

II and IID IIP (available)		£ call
1MB	H33443B	134
2MB	H33444B	227
4MB	H33445B	399

5 AST MEMORY

		(£)
PREMIUM 386/25		
1MB Kit	500718-001	145
PREMIUM 386/33		
1MB Kit	500718-002	162
PREMIUM 386/C & 386/16		
1MB Kit	500510-007	132
4MB Kit	500510-008	397

*Upgrades for all other AST models are available. Please call for details.

6 APPLE MEMORY

	(£)
MacINTOSH II, IIcx, IIx	
1MB Kit	58
2MB Kit	168
MacINTOSH IIci	
4MB Kit	327
Laserwriter II/NTX	
1MB Exp/Kit	157
4MB Exp/Kit	464

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256K x 8 – 80	23
256K x 9 – 100	26
256K x 9 – 80	29
256K x 9 – 60	38
1M x 8 – 100	67
1M x 8 – 80	70
1M x 8 – 70	74
1M x 9 – 100	75
1M x 9 – 80	79
1M x 9 – 70	84
4M x 8 – 80	635
4M x 9 – 80	690

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1M x 1 – 80	6.85
256K x 4 – 80	6.85

9 AMSTRAD

	(£)
1512 Upgrade	25

10 AMIGA MEMORY

AMIGA 500	(£)
512KB with clock	75
without clock	65

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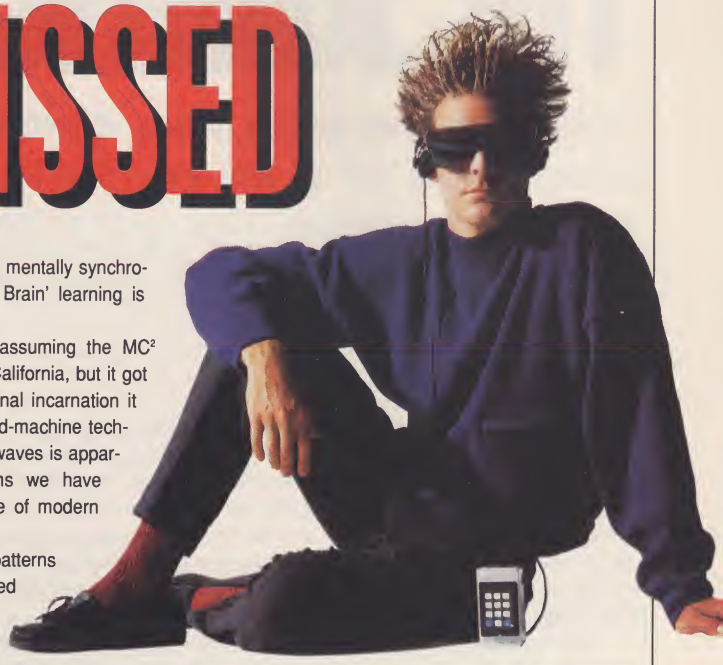
Aldershot, Hampshire GU11 3DP
Fax: 0252 341939

Andy Storer checks out what the geek with the glasses is wearing – the sights and sounds of a new age apparently...

LET'S GET BLISSED



Imagine having the power to induce deep relaxation, accelerate learning abilities and change behaviour patterns at the touch of a button. So proclaims the promotional copy for Light and Sound Research's MC² Dreamachine – described as "a computerised audio-visual component system".

The unit comprises a small Walkman-sized computer with 10 pre-set options, a set of headphones and light-producing glasses, power adapter and audio jack. The dark glasses have a pair of red LEDs mounted inside each lens, pointing at your eyes. You punch in a number on the keypad to select one of the 10 preset programs, don the phones, put on your shades, close your eyes and you're away. An optional add-on is a 'couples adapter' for prolonged mutual satisfaction beyond the threshold of normal human intercourse – or as the bumf would have it "for some very interesting experimental sessions"!

The idea is simple. Synchronised light and sound patterns are pre-set to induce relaxation, focusing, learning and motivation. The user mentally synchronizes to the output and 'Whole Brain' learning is maximised. Get it?

You might be forgiven for assuming the MC² hails from a hilltop commune in California, but it got to Britain via Arizona. In its original incarnation it stems from the USSR where mind-machine technology based on studies of brainwaves is apparently all the rage. So it seems we have *glasnost* to thank for this miracle of modern technology.

Four major brain-wave patterns have been identified and monitored at various activity frequencies. Beta waves, running at 13Hz and above, alpha at 8-12Hz, theta at 4-7Hz and delta at 1-3Hz. Beta waves appear when we're active – talking, driving and working, while alphas come to the fore when in meditation or deep relaxation. Delta waves are produced by the brain when we're in states of deep sleep, but it's the theta waves that the MC² fosters. These waves are produced when we're in creative and learning states. So by emitting light and sound in the 4-7Hz frequency band the audio-visual stimuli are designed to effortlessly lull you into a highly motivated, yet deeply relaxed state in which you can "achieve your goals by directing your subconscious mind to work in co-operation with your conscious desires".

• One of the most popular Dreamachine tapes is the kung fu program* Martial Artist. *Here an advanced Ninja demonstrates the beneficial effects Whole Brain thinking has on breaking and kick skills.

FROM BETA TO THETA

The object of the 10 pre-set patterns is to allow you to choose different 'time frames' to accomplish a certain purpose. Each preset starts in beta state, moves to theta and returns to beta. Light travels through your closed eyelids, sound enters your ears and the frequencies harmonize to establish a passive frequency-following pattern.

The time frames run from 15-minute high-energy brainstorming sessions to 75-minute dream-enhancement and advanced visualisation meditations. Meanwhile, photoconvulsives (*sic*) and epileptics are advised to seek assistance from their physician before using the device.

Light and Sound also supply over 100 tapes for use with the Dreamachine, ranging from the subliminal to the – wait for it – hypno-peripheral, the meditative to the martial. *Mind Aerobics* and *Meet your Inner Mate* are just two of the more colourful titles available. As each program goes into motion your ears are greeted with a string of low-pitched beeping tones that seem to echo through the phones, and as the program progresses their frequency slows. As does, supposedly, your brain-wave activity, as it synchronises with the machine's stimuli.

BUT DOES IT WORK?

A difficult question to answer since we didn't have a unit here. But from the accompanying press cuttings from various American magazines ranging from *Popular Electronics* and *DealerScope Merchandising* to *Business* and *Black Belt* (touted as "the world's leading magazine of self-defense") the answer would seem to be a qualified yes.

Interested non-photoconvulsives should call 0101 602 941 4459 for more information, and to meditate over the price of New Age relaxation – $350. ■

DIGITAL BRAINS

While you're reading these words you're using Wernicke's Area located in the left-hand side of your brain. Your right-hand side will take over once you attempt to move. The page you have in your hands is printed with poisonous ink seeping into your arteries. That sentence just caused your medulla oblongata beneath the cerebellum at the top of your head to increase your heart beat rate and trigger thousands of the 100 billion neurones inside your brain. Although in computing terms your brain only runs at 0.1MHz, its immense power is derived from the fact that there are 3,000 billion synapses connecting its neurones – each one performing a single operation. By comparison the world's biggest artificial neural network on a Hitachi wafer-scale chip contains only 576 neurones. So a computer with even the remotest resemblance to human faculties is some way off. One that needs deep meditation techniques to relax is even further away.

BACKGROUND RADIATION

The study of brain-waves is known as electroencephalography, which is the longest word ever to appear in *New Computer Express*. It was first coined in 1924 by a certain Hans Burger, a German psychiatrist. Early forms of electroencephalograms (let's just call them EEGs shall we?) produced in experiments in the 1940s, actually used radar machines to obtain information from reflected radio pulses from volunteers. The Tuposcope was invented in 1949 and brought brain signals to the screen. As such wave patterns could be tracked, and by 1954 thousands of hospitals were using EEGs to diagnose brain disease.

In the early Sixties, further research on the brains of Zen Buddhist monks revealed that meditation changed the brain's electrical activity – alpha and theta waves were produced in profusion. Finally, current research is setting out to prove that the right and left hemispheres of the brain, normally operating out of sync, shift into a single, coherent rhythm operating in unison, during deep meditation or intense creativity. It is this 'Whole Brain' synchronisation the Dreamachine attempts to induce.

THE PUBLIC DOMAIN: SOFT

Building up a comprehensive library of software packages needn't cost an arm and a leg. Jason Holborn and Steve Townsley point you in the right direction with a look at the top 10 PD and shareware titles on the ST, Amiga and PC.

Computing is an expensive affair. It's bad enough having to hand over hundreds of pounds for your machine, but before the ink has dried on your cheque book you find yourself having to hand over even more cash to make your computer actually do something productive. You can play with the demonstration programs that came with your new toy, but you'll soon find you need serious tools such as a decent word processor, a few utilities to make things run smoother, and couple of games. Add the price of this little lot up and chances are you're looking at a bill that nearly equals that of the computer itself!

The answer lies in public domain software, something that has been around ever since computers started. After all in the early days it was natural for the pioneers to swap ideas and programs to prevent duplicated effort – so share and share alike made sense. It wasn't until computers became widely available that the software itself became a commercial proposition – and copyright protection became an issue.

But through PD it is still possible to share the work of people who are perhaps more interested in the programming than the hype.

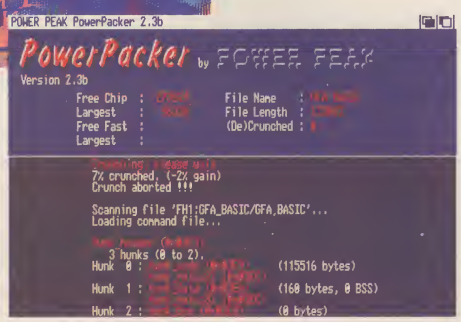
SHAREWARE

Suppose an author comes up with a good idea for a program – but a 'good' idea rather than a brilliant one. It could sell as a commercial product, but there's no guarantee. And why go through all the hassle of flogging it and negotiating a deal that might, after all, not be very lucrative? The answer is to put it out through one of the PD marketing companies as shareware. It's the modern author's version of publishing your own work – only a lot cheaper and more rewarding.

The system is based on honesty so there will always be a few cheats – often because they believe, (or pretend to believe) that shareware is free software. But luckily most people do pay, even when they have copied the software from a friend. It's not unusual for a successful author, with Shareware Marketing for instance, to receive cheques, money orders and bank notes of unfathomable denomination from all over the world. And the top entry in Shareware's Registration Charts has received 45 times more registration fees than the number of copies originally supplied!

But first, let's see what is actually available. To show you what a caring lot we are, we've compiled an *Express* hit list of the best in PD and shareware. If you own one of the machines mentioned, then you can't go far wrong if you invest in a few of these programs. ■

• Ani-ST *is a powerful Atari animation package – for the price of a disk!*



• Power Packer *compresses Amiga files and saves valuable floppy disk space*

THE PC TOP TEN

1 4DOS
When DOS runs on your PC the command processor is the thing that does the work of taking the input from your keyboard like 'DIR' to produce a result (in this case the directory listing).

However COMMAND.COM, the DOS command processor, is a pretty dull beast and takes up a lot of memory. So if DOS is looking tired and old then *4DOS*, the replacement for COMMAND.COM, could be for you.

2 As-Easy-As Version 4.0
Second place in the top 10 makes *As-Easy-As* the world's most famous shareware spreadsheet.

Before the present wave of huge programs created by teams of developers, the world's best selling software (*dBase II*, the original Lotus and so on), was created by one, two or at most three people.

As-Easy-As also gains from being the product of one man's programming skill and sells well because it doesn't just mimic or clone an idea, it is full of originality incorporating many functions.

3 Draft Choice
The CAD program from the creator of *As-Easy-As*. Need we say more.

4 PC-File Plus
Buttonware's famous database goes on and on.

5 Automenu
Automenu is probably the world's best selling menu program and it's number 5 position reflects its quality and popularity.

Equal 6 Typing Teachers and CPU/Memory Utils
A joint 6th place indicates that utilities can also score in shareware.

8 PK-Zip
Every PC owner knows about compressing files. The *Zip* format is now one of those industry standards.

9 Intermediate Necessities
The utilities disk that every PC owner should have is an ever-present force in the top 10.

Equal 10 Beginners' Necessities and PC-File:dB
Another joint entry brings together a disk of utilities for the first time PC user and Buttonware's database *PC-File:dB*.

PC-File:dB combines the familiar *PC-File* interface with the use of *dBase III* file formats.

This sales top ten (based on Shareware Marketing's figures) was overwhelmingly oriented towards applications software, whereas other public domain libraries have recently revealed top ten lists with a common theme of games and leisure interests.

One of the major omissions from the list is a word processor. *PC-Type Plus* and *Galaxy*, hovering around the 20 mark, are the only word processors with a significant following.

THE REGISTRATIONS CHART

The most often asked question about shareware is: 'How many people are honest enough to cough-up the registration fee?' So as well as the top 10 shareware programs here is the top five for registrations.

The figures in brackets indicates the percentage of registrations against shareware disks bought. For example 50 per cent would indicate that half of people who purchase a shareware disk registered their software. A figure of 200 would indicate that twice as many registrations were received compared to shareware copies originally sold.

The registered Top Five are:

1 Procomm Plus	4,500%
2 As-Easy-As	910%
3 PC-File:dB	750%
4 PC-File Plus	326%
5 Powermenu	291%

Procomm Plus registrations were 45 times the number of shareware disks sent out, which clearly makes it the world's top PC comms program. Bearing in mind its position in the top ten, it's easy to see why *As-Easy-As* should perfom well, and the strong registration return of *PC-File:dB* and *PC-File Plus* should cause no surprise either.

FTWARE FOR THE MASSES

THE ST TOP TEN

1 Ani-ST
Now here's a real PD bargain. Until recently, *Ani-ST* was sold as a full-price product under it's original guise, Aegis *Animator* (it would have cost you £80 two months ago!).

As the name suggests, *Ani-ST* is an animation package. The program uses a system of 'tweening that allows complex animations to be set up with very little hassle at all. If you only ever buy one item of ST PD, *Ani-ST* has got to be it.

2 ST Writer
If you're looking for a word processor, you won't go far wrong with this PD program. It's not WYSIWYG (What You See Is What You Get), but still manages to be a corker. Should be adequate for most word processing applications.

3 Neochrome
The ST's an ideal medium for dabbling in pixel art, and *Neochrome* is the ideal program to dabble with.

It boasts a host of painting functions including different shapes and sizes of brush, airbrushes, lines, boxes – the works. If you look very hard, you'll even find a hidden animation facility! Start realising your ST's potential as a graphics workstation.

4 Fast Copy 2
Let's face it, the standard TOS disk copy tool is a bit of a dodo. Even if your ST is equiped with 4Mb of RAM, you'll still find yourself having to swap floppy disks continuously.

Fast Copy 2, as the name suggests, allows the rapid backup of most TOS-format disks. All this is carried out from within a nice GEM front end, so pretty well anyone can use the program with ease.

5 Mono Emulator
It's not fair! You went out and bought an ST plus colour monitor, only to find that all the software you wish to use will only run on a mono monitor. What can you do?

The *Mono Emulator*, by Nick West, is the colour monitor owner's best friend. Not only can you take advantage of the wealth of ST games and art packages, but you can even run programs like *Calamus* and *Cubase* without having to fork out for a second monitor.

6 Colour Emulator
It's not fair! You went out and bought an ST plus mono monitor, only to find etc etc.. What can you do? (apart from swapping monitors with the chappie above!)

Just like its counterpart, the *Mono Emulator*, the *Colour Emulator* will allow those of you with mono monitors to run colour software like paint packages without having to resort to stealing the family TV.

7 Disk Mech
ST disks may seem reliable, but fate decrees that if one disk in one hundred is to go wrong, then you can bet that it'll be the one that holds all your important files. That's when you need *DiskMech*.

Short for disk mechanic, it's basically a first aid kit for floppy disks. It will allow you to analyse the structure of a disk, archive, edit and carry out a whole host of extra operations on your disk data.

8 Sozobon C
Ever wanted to learn to program in C, but can't afford the £200 asking price of commercial C compilers? Sozobon C is the answer.

Sozobon C provides all the programs, header files and libraries that you need to write and compile programs written in the C programming language. Not only that, but it's backed up by something that PD programmers often forget about – extensive documentation. For those of you who know about such things, Sozobon is a complete implementation of Kernighan and Ritchie's C standard.

9 4Pak
No, this isn't something you'd pick up at the local off-licence, but a very handy file compression utility. Just like the Amiga *Power Packer* utility, programs packed using *4Pak* do not need the original program to run – just double click on the crunched program and the program decrunches itself.

10 DC Format
720K may sound like a lot of storage space when you first bought your ST, but you soon come to realise how quick disks are filled. There are several PD programs available that claim to increase the amount of data storage space available on a disk.

The best of these is *DC Format*. Not only will *DC Format* handle ST disks, it even allows you to format disks in Spectre MFS, HFS and even MS-DOS formats. Very useful.

THE AMIGA TOP TEN

1 Star Trek
It's boldly-go time with this amazing PD version of the cult Sixties TV series.

This program, which comes on three disks and needs at least a megabyte to run, features sampled sound and digitised HAM graphics from the film. This is a must for every PD collection, and is rather blatantly similar to the *Star Trek* game that Firebird released on the ST some years back.

2 Game Music Creator
Game Music Creator is a complete music composition system that uses sampled sounds as instruments – sounds which can also be found in abundance within the PD libraries!

The program offers four tracks of real and step time recording and drum machine-like editing. For anyone who appreciates the musical ability of an Amiga, this program will provide many hours of fun.

3 MandelVroom II
Explore the world of fractal graphics with *MandelVroom*, a rather spiffing Mandelbrot generator. If anyone ever tells you that Mandelbrots are boring, just sit them down in front of *MandelVroom* and they'll soon change their tune.

Apart from its ability to produce some stunning Mandelbrot and Julia set plots, *MandelVroom*'s greatest asset is that it is multi-tasking. Using multiple windows, *MandelVroom* will happily generate several different Mandelbrots for you simultaneously.

4 Access!
Access! is an absolute must for anyone wishing to get into comms with the Amiga. Everything that you'd ever want from a comms program can be found within this PD gem. Supports many different baud rates, X-Modem, Y-Modem, Z-Modem, Kermit – you name it, *Access!* will do it.

5 VirusX 4.0
Want to keep the dreaded lurgy off of your disks? Then there's no greater protection that the Amiga industry-standard virus killer, *Virus-X*.

6 Power Packer 2.3b
If you need to free up some disk space, but you don't want to start removing programs from your hard disk – *Power Packer* will do the trick.

It is a complete file compression utility that allows you to 'pack' any file down to a percentage of its original size. Unlike most other programs of the type (*Arc*, *Zip* etc), programs compacted using *Power Packer* do not need to be uncompressed using the original program before you can actually run them.

Power Packer works by attaching a little de-packer module onto the start of your compressed program, which will automatically decompress the program before running it.

7 QL Emulator
If you've just sold your old computer to buy an Amiga, chances are that you'll have a mountain of apparently useless software left over. What you need is an emulator. Currently, the Amiga can emulate an IBM PC, a Commodore 64, a BBC micro, an Apple Macintosh and a Sinclair QL – but in all but the last case it's an expensive business.

The UGA QL emulator provides complete emulation of the machine that Sir Clive tried to fool us into thinking was a quantum leap in technology. It will run most QL software, read QL disks, but best of all, it costs little more than a single microdrive cartridge. A true PD bargain!

8 mCAD
Here's a true demonstration of the quality of PD software. *mCAD* is a powerful and comprehensive computer-aided design package that should keep you going until you can afford *X-CAD*.

It allows you to carry out many of the functions that you'd expect to find in a professional CAD system and then output the lot in jagged-edge-free form to any preference-supported printer. Even if you're not a serious CAD user, *mCAD* is still worth investigating.

9 NewZAP 3
NewZAP is one of those programs that don't seem immediately useful until you actually start using them. It's a file editor that allows you to change the values of any bytes within any binary file. Proves to be particularly useful when editing ASCII text within a program that you haven't got the source code for!

10 Amoeba Invaders
Move from side to side, shooting the aliens as they move down the screen. PD games certainly don't get much better than this amazing adaptation of that arcade favourite, *Space Invaders*.

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Sorry, no personal replies, even with an sae.
This week's replies written by Martyn Lester.

Pardon my French

In *Express* 66 you printed a news article about the character licence Asterix.

The article stated that the French publisher Coktel Vision has the licence to Asterix and that it had obtained the licence from the movie makers while The Edge obtained its licence from the book publisher Hodder Dargaud.

In fact, The Edge, Coktel Vision and Hodder Dargaud all obtained licences from the same source, that being Albert Rene. The Edge is about to become the exclusive distributors of Asterix games in the UK, and Coktel will distribute The Edge Asterix games in France.
Jim Loftus, The Edge

I'm glad we've cleared that one up. Should save me many a sleepless night worrying whether we had another Liverpool football games situation on our hands.

Cock-up 1

As an ex-ST owner I feel I am justified in saying that the new STE is a complete cock-up.

It may have more joystick ports, a new sound chip, 4,096 colours and even a blitter (though an unuseable one), but how can Atari expect to win the ST versus Amiga battle if the STE is not even fully compatible with the majority of excellent ST software that is available (including software that's bundled with the STE).

As a proud Amiga owner, I can only say that I am glad I got rid of my ST when I did!
Paul Stewart, Oldham

Do you think this topic is wearing just a little thin? This next reader does...

Cock-up 2

After reading Matthew Howkin's letter (*Express* 62) I groaned inwardly, knowing full well that the fruitless arguments of issues gone by would be enacted again. However, the degree of brag-laden vitriol offered in reply in *Express* 64 surprised even me.

What is the problem with my fellow 16-bit owners? Do they all feel so insecure as to their respective purchases that they have to attack everyone else? Perhaps they are so involved with their machines that they take such comparisons and criticisms personally. I sincerely hope that we can avoid this flexing of computational muscle in future.

After all, as Alexi Sayle might say: Big computer, small dick.
Andrew Bradbury, Fearnhead, Warrington

Stunning really, isn't it? However much I may want the letters pages to reflect what is dragged in by the local Postman Pat – and the volume of mail slagging off Mr Howkins has been phenomenal – I think that after a brief selection of ripostes from ST owners next week it will be high time that this debate took a rest for a month or six.

Good book

Michael Kirk who wrote in Tech Tips recently seemed very pleased to discover how to trash the Trash Can on the Atari ST desktop. Atari seem to like keeping secrets. The manual tells you nowt!

Any reader who wants a book full of tips, tricks and sound advice should order a copy of *Your Second Manual to the Atari ST,* published by The ST Club, 49 Stoney Street, Nottingham NG1 1LX.

The new edition is even better. I learned more from this book than from anywhere else. It is highly recommended.
Rev. Brian Elliot, Dover

I am sorely tempted to ask whether a man of the cloth can really have learned more from a manual than *anywhere* else, but I think I'll resist lest I get my vicars in a twist.

Cock-up 3

Concerning the 'My Willy Is Bigger Than Yours' controversy, I simply cannot understand why your organ has allowed this mass debate to go on for so long.

While I would agree that Atari made a cock-up and prematurely ejaculated the STE onto the market, I fail to see how these Amiga owners feel that they can make any useful comparisons, when they so obviously only have hands-on experience of their own.

PS. I have 4Mb of RAM and kissed a girl once.
Bill Barret, London

I am sure that this letter could easily be understood by a child of 10. Unfortunately, the child of 10 I usually keep about my person for inserting 'fnarr fnarr' comments into letters is on loan to *Amiga Format* this week, so I will just have to live in blissful ignorance of what Mr Barret is on about.

Right to reply

In response to the reply to my previous letter, I felt it was necessary to correct a few misconceptions that the response had shown.

Firstly, the erroneous comment on my allusion to the 8086, I didn't state in my letter anything to suggest that I was comparing the 8086 to the 80286 in terms of betterment. In truth, what I was saying was that the transfer of software was best done this way.

For instance, the SAM Coupé, although it is designed to run Spectrum software, does so with the same processor, albeit at a faster speed. On the other hand, IBM have a processor series that takes the basic chip and adds to it.

This I suggested as a way of satisfying 'neoprogophobics', those allergic to renewing their software every time they buy a new model of computer.

Secondly, the point on fractals was a case study, it could have been anything that functions more effectively on a better micro. Indeed, aren't there things that 8-bit computers can't do? Things that could make life easier?

To complete this letter, I would like to say that there are places where 8-bit computers are past their sell-by date. Education, for instance. I don't believe that our country's school pupils are getting the correct training.➤

Dungeon drags on

I see from the letters page of *Express* 64 that Mirrorsoft has had problems duplicating *Dungeon Master.*

This might explain why they have been producing copies of version 1.1 instead of the much more playable 1.2. In case you are wondering, 1.1 is identical except that it plays much more slowly.

This does not present a real problem until your Manna, Health and Stamina levels are high (say up around the 500 mark) then it takes ages for them to replenish themselves. I found that when I reached this level of power the delay made the game virtually unplayable.

Just before Christmas I tried to purchase *Dungeon Master* but found that the only copies on offer were still 1.1. I was advised to purchase 1.1 and then send it in to Mirrorsoft for an upgrade, at which point I would be asked to pay a surcharge – a disgusting state of affairs.

I wonder what Mirrorsoft has to say about this extra cost to the consumer, for no other reason than that the company could not produce the proper program. When I want an outdated version of a game at full price (plus cost of upgrade) I will ask for it.
D Hackett, Penilee, Glasgow

• *Troubles with* Dungeon Master

I have little doubt that they will let us know in the very near future...

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There are no good reasons for software houses to price games so highly

OK, before you start getting out the crucifixes and garlic, I'll admit it – I'm a pirate.

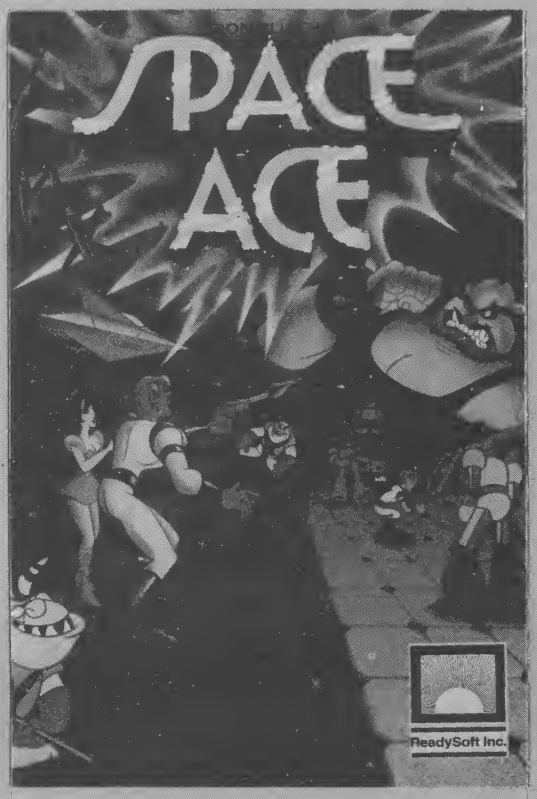
The real cause of piracy rests with both sides, not just one. And the reason is cost. We've all heard the argument that if you can afford the computer then you can afford the games. That's rubbish and everybody knows it.

The majority of Amiga and ST owners are just normal people, (mostly kids) who don't earn £10,000 a year or drive Porsches. They would like to get the most from their machine, but simply can't afford the games.

Say, for instance, that you buy the Batman pack. With it you get three games and *Deluxe Paint 2*. Poor old dad finds out a week after buying it for his kids at Christmas that they're beginning to get bored with the games. Then he finds out just how expensive the software is!

Can you give me one good reason why software houses price games so highly? I sincerely doubt it.

Value for money? Hardly. Most of the games available today are very poor value for money. Take *Shadow of the Beast*. Brilliant graphics, excellent sound, not so good gameplay (but still a good game), and what do Psygnosis do? Put the price up £10. Then they start complaining about the speed at which pirate copies appeared – what on earth did they expect!



• Space Ace: *stunning, but the cost!*

And *Space Ace*, one of the most stunning games to appear on the Amiga – £45! If it was £25 then they would have sold hundreds more copies than they did.

The only way to stop piracy, or at least slow it down, is to bring the price down – to around £15 at most. If and when they do, then piracy will begin to subside. Bitching about it to the press and getting all worked up about it won't do anything.

Anon

I would agree with you that there must be a lot of somewhat miffed parents out there who have been taken aback by the sprogs demanding quantities of folding money only weeks after they have shelled out up to £400 on the machine itself.

I think it is more than a little unfair, though, to blame the software houses for the stupidity of your theoretical 'dad' in not checking out what additional games are going to cost before he takes the decision to buy the machine.

Anyone who bought a CD player for his hi-fi and then found he couldn't afford the discs would generally be regarded as a blithering idiot, and any attempt to blame the record companies would be greeted with a chorus of howling derision.

Where your argument really collapses is in saying that games are priced unrealistically, because if that were true then thousands of people wouldn't be shelling out the money to buy them and software houses wouldn't be raking it in by the Porsche-ful.

On the subject of porcshes – I think you need to earn more than £10,000 a year to own one. Although, as an *Express* writer I can't be sure.

What always sets my mind spinning about the arguments advanced in favour of piracy is the assumption that access to cheap games is a right, like that of free schooling or getting a fair trial.

Let's face it, if the price of games were to drop to £15, you would moan about them only being worth a tenner and pirate them anyway.

If companies started giving games away, you would probably drop a line to Express Mail arguing that really you ought to be paid something by the software houses for the effort that you put into playing the things.

The micro that dominates our schools is not a good 'real-world' computer. If we don't start to realise this fact soon, while we're still step-by-step programming the rest of the world will be parallel processing.

I feel that reason alone is enough to justify my objections.

Mr D. Spragg, Walsall, West Midlands

Are schools getting it wrong? Are the 8-bit machines past it? Could this be the subject that eases Amiga and ST owners away from each others' throats for 10 minutes or so? Watch this space.

Taking sides

I am a frustrated, but proud owner of an ST with a 1Mb drive. Why is it that software houses insist on putting all their software on single-sided disks, making us 1Mb drive owners go insane through enormous amounts of disk swapping.

I have come up with a solution to this problem, and until all those tight-fisted half-meg drive owners decide to cough up for an upgrade it will have to do.

What I suggest software houses do is to still supply the normal two disks, but make the first disk double-sided and put the contents of the second disk on it. Then everybody's happy – 1Mb owners don't have to swap disks (and also get an extra disk they can format) and half-meg owners still get all the program. Neat eh!

All I can say to the software houses is please, please take notice of this before some of us go mad!

Michael Kirk, Stevenage, Hertfordshire

Sounds like a damn fine idea, but I'm not sure it's quite that simple.

Apparently – and I'll admit I get lost in this technical stuff – double-sided disks have to be formatted in a non-standard manner so that a single side can also be read by a half-megabyte ST.

It may be that the alteration could be carried out simply, but possibly mass-duplication equipment is committed to standard formatting techniques and would cost a fortune to upgrade.

Perhaps one of the software houses will be kind enough to illuminate the subject for us?

STE goes public

I have a number of points to make; firstly concerning the new STE and the compatibility of public domain programs. As one of the only ST-PD clubs to have now tested all our software on the new machine we can tell new STE owners that it's not all bad news!

Approx 80 per cent of the normal PD works. Unfortunately we cannot find a suitable mono-emulator, so if any body has written one that works on an STE they could contact us. As is already well known, no STOS progs work, and some of the top-notch crew demos don't either.

Contrary to Softvilles' ideas that most of the Budgie UK products fail to work, I can assure your readers that 60-70 per cent of it does! An STE update is now included in our catalogue for new owners, send SAE to this address: Paradise Computers, 9 Westfield Crescent, Brighton, East Sussex, BN1 8JB.

Secondly, I would like to reply to Andrew James, *Express* 64. The argument about PD profiteers becomes difficult when you try to decide whether or not 'wages' are profit. I mean, as Andrew said, cleaners may get £2 per hour, so therefore they are making a profit!

I firmly believe that people should not take a wage out of PD software. As a library, none of us get anything apart from the satisfaction of knowing we are supplying other ST users with – we hope – a good service. All three of us are students and run the PD library in our free time, and what do we do it for – nothing. So to people who say, "nobody does anything for nothing" I would say, call me stupid, but I do.

Finally, do any readers know of or run a service whereby I can send them some DTP files (*Calamus*) and they can give me laser output? Of course payment would be provided!

Many thanks for the good mag.

Neil Slater, Paradise Computers, Brighton

Rapid response

A few days ago I sat down to write you a letter complaining about how slow and unreliable mail order sofware companies are. That is until now.

I ordered a word processor for my Amiga (it arrived the next day), and I could not get it to function. So I sent it back. When it reached them I was rung up and asked for a complete description of the problem. They could not find the problem, but they replaced it without question with a different word processor (I paid the difference).

As I am dyslexic. I use a word➤

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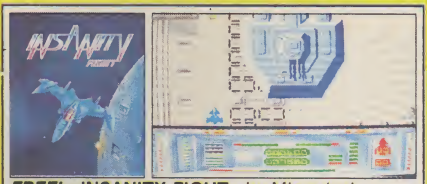

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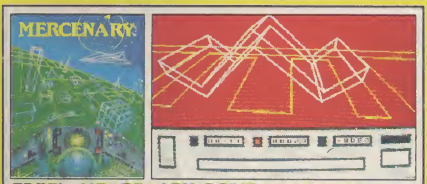

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If so, which one do you own?

processor for all my main writing, so I am glad of the help that I received. I would like to thank everybody at Hammersoft in Norwich for providing a great service – from now on they are my main company. Thank you once again.
L. C. Irving-Bell, Oundle, Peterborough

You mean you have written to *Express* to say something nice about someone and not boast, complain or plead mitigation for your bad habits? Hang on while I reach for the smelling salts.

Howard's way?

I am writing this letter in connection with the article about Michael Howard, the Secretary of State for Employment, in *Express* 63.

What utter rot he is spouting. My son is now 20 years old. He left school at 17 and went straight into full time education at college. He studied a one-year City & Guilds for computers, followed by a 2 year BTEC National Diploma for Computer Studies. He passed both courses with flying colours and now cannot get a job.

He spent the whole of 1989 writing thousands of letters for a job. Forty per cent of firms do not even bother to reply, and the others want a certain amount of experience!

How on earth can he gain this if no one gives him a chance? Where are these so called computer jobs? I spoke to one computer manager to whom my son had applied for a job, and he said he didn't know where these jobs are and it is just sheer luck if you get one.

So, Michael Howard, get your facts right before you say rubbish like this! I wish I could have made this letter stronger, as the way I feel about this cannot be put down on paper.
Mrs B. Smith, Sheffield

Does this mean I have to bite the bullet, take a political stance and alienate half of the *Express* readers? OK. Here goes...

Pocket calculations

• *The Nintendo Gameboy: at the centre of a new-found controversy?*

I am writing to complain about the way the Nintendo Gameboy was treated in its recent comparison with the Atari Lynx. I own a Gameboy and believe that it is by far the best machine. Here's why:

1) The Gameboy does not cost £100 and the Lynx £120 as you stated; here and in the USA the Lynx is approximately double the price.

2) You did not mention that the Lynx batteries will only offer three hours of continuous play. This is clearly not enough. What happens if you want to take it on a long journey somewhere (and with any luck leave it there)? You would need to take six extra batteries!

3) The Lynx is too large to be considered a true hand-held, while the Gameboy will easily slip into a jacket pocket. In fact you would be hard pushed to find a pocket big enough for the Lynx – so you would have to carry it around everywhere.

4) You seem to have forgotten the most important factor in your review: game playability. Every, and I mean every, Gameboy game I have is incredibly playable and addictive. In fact, I have never seen a bad game review for it. Can the same be said of the Lynx?

5) You can get *Tetris* for the Gameboy!

Surely it is now obvious that the Gameboy is the superior hand-held.
Peter Worth, Shoreham-by-Sea, West Sussex

I just knew that something would come up to replace the interminable Amiga-versus-ST slanging match.

I take your point, though. Crikey! Imagine having to fill some small part of a journey with an activity other than playing electronic games. It could be enough to force you to do something drastic like reading a book or even talking to someone. What a horrifying thought.

As far as I am concerned, this Government has spent most of its term of office either blatantly or by innuendo blaming unemployment on the unemployed themselves. Calling on people to learn more computer skills is really just the umpteenth episode in the 'on your bike' saga.

The problems the Government needs to address are the adequacy of training schemes already in place and the willingness of employers to give people the chance to acquire work experience, rather than expecting them to come ready-equipped with it.

I think it is instructive to note the comments made by the Computer Services Industry Training Council's Gordon Ewan in the story, where he says of Government courses: "Their aims aren't really to produce highly trained workers". He also points the finger at industry itself and states: "Companies need to start investing".

The Government is not noted for its willingness to accept any blame for the state of the nation, and it is little more willing to criticise the industrialists who make such hefty donations to its party coffers. Instead, it insults people like Mrs Smith's son by making out that jobs would be easy to get if only those lazy unemployed people would bother to train for them.

Perhaps people will eventually become tired of executive passing the buck and will turn to their most potent weapon – the ballot box. I don't suppose the incumbents will be getting Mrs Smith's vote next time round. They certainly will not be getting mine.

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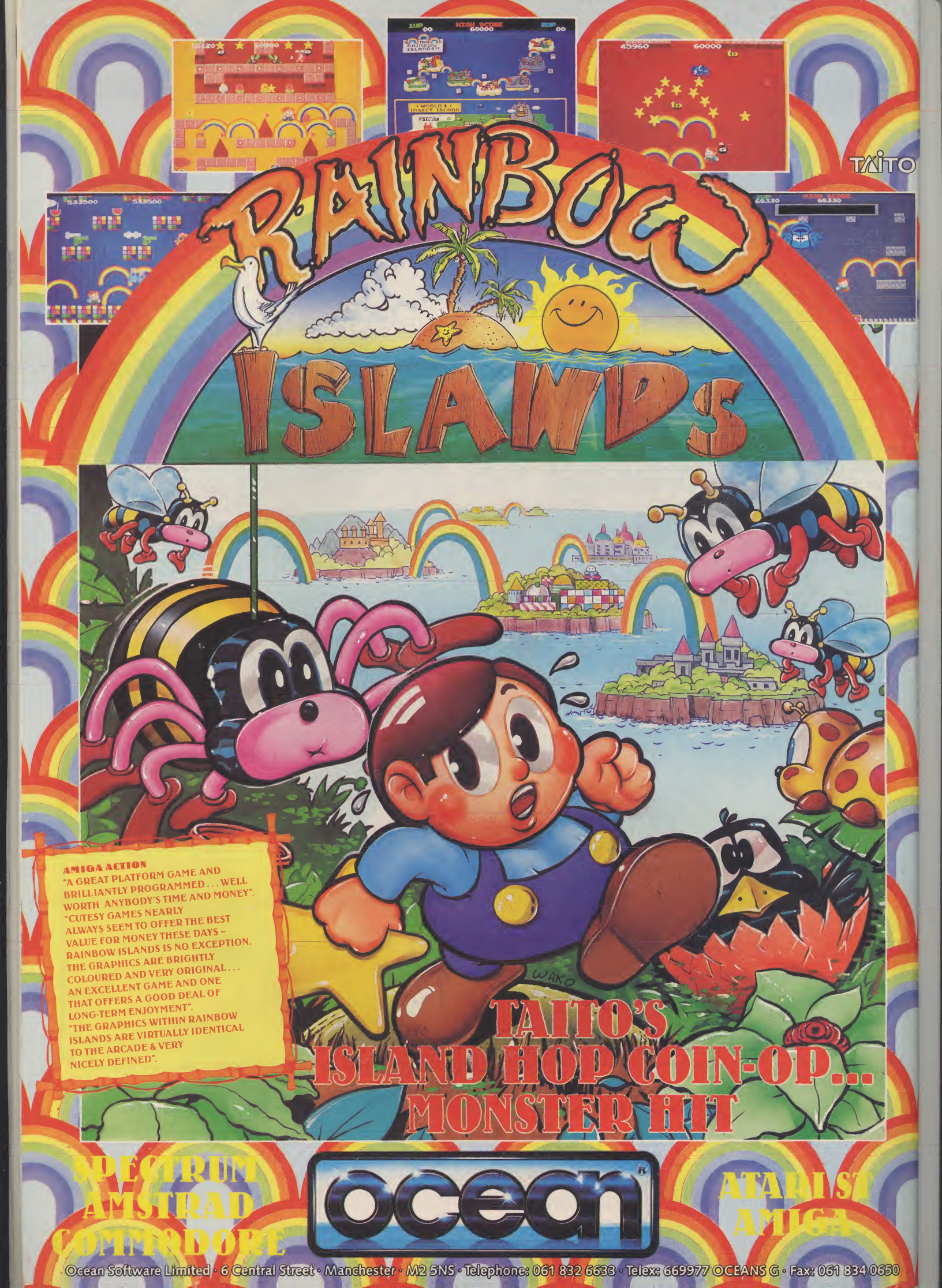
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